

EXHIBIT E



Sediment Management Standards

Chapter 173-204 WAC

Revised February 2013, Effective September 2013
Publication no. 13-09-055

EXHIBIT 11

D. Schlenk
11/13/2019

C. Vega, CSR 6640

Publication and Contact Information

This report is available on the Department of Ecology's website at
<https://fortress.wa.gov/ecy/publications/SummaryPages/1309055.html>
For more information contact:

Toxics Cleanup Program
P.O. Box 47600
Olympia, WA 98504-7600

Phone: 360-407-7170

Washington State Department of Ecology - www.ecy.wa.gov

- | | |
|---------------------------------------|--------------|
| ○ Headquarters, Olympia | 360-407-6000 |
| ○ Northwest Regional Office, Bellevue | 425-649-7000 |
| ○ Southwest Regional Office, Olympia | 360-407-6300 |
| ○ Central Regional Office, Yakima | 509-575-2490 |
| ○ Eastern Regional Office, Spokane | 509-329-3400 |

If you need this document in a format for the visually impaired, call the Toxics Cleanup Program at 360-407-7170. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

Washington Department of Ecology

Frequently Asked Questions Sediment Management Standards Chapter 173-204 WAC

About the Sediment Management Standards Chapter 173-204 WAC

Why do we need the Sediment Management Standards?

When contaminants enter the water, they often accumulate in the sediment, especially for contaminants with low solubility. The aquatic ecosystem is dependent on clean water and clean sediment to maintain healthy and diverse populations. Sediment standards are needed to protect the aquatic ecosystem, especially the animals that live in the sediment or depend on sediment-dwelling organisms as a food source. Sediment standards are also needed to protect people who eat fish and shellfish from our state's waters.

What are the Sediment Management Standards? What are they used for?

The Washington State Sediment Management Standards (SMS) Chapter 173-204 WAC were developed to reduce and ultimately eliminate adverse effects on biological resources and significant threats to human health from surface sediment contamination. The SMS are used to:

- Set standards for sediment quality (both numeric and narrative);
- Apply the standards to reduce pollutant discharges; and

- Provide a decision process for the cleanup of contaminated sediment sites.

The SMS rule has six sections:

- Part I: General Information. Includes administrative policies.
- Part II: Definitions. These definitions apply to Parts I –VI of the rule, unless a definition in Part V supersedes Part II definitions.
- Part III: Sediment Quality Standards (SQS). This section has numeric chemical and biological benthic criteria for marine sediments and narrative standards for the freshwater benthic community and protection of human health. The SQS correspond to the long-term goals for sediment quality in Washington State. Sediments at or below the SQS criteria are expected to have no adverse effects on biological resources.
- Part IV: Sediment Source Control. This section includes a process for managing sources of sediment contamination. This portion of the rule includes a process for managing discharges (under the National Pollution Discharge Elimination System, or NPDES) with the potential to impact sediment and managing dredged material disposal activities.
- Part V: Sediment Cleanup Standards. This part of the rule is adopted under the Model Toxics Control Act (MTCA) RCW 70.105D only. The goal of the sediment cleanup decision process is to provide a framework

for timely decisions and expeditious cleanup of contaminated sediment sites. Part VI Sampling and Testing Plans/Recordkeeping. This part of the rule includes requirements for sampling plans, reporting, and records.

What are the criteria in the Sediment Management Standards?

The SMS rule has a two tier decision framework for managing sediment. This includes two levels of criteria for protection of the benthic community, human health, and higher trophic level species such as fish.

Benthic Community Criteria. For the benthic criteria, the SMS contains two different levels of criteria for marine and freshwater sediment, the “no adverse effects” and “minor adverse effects” levels:

- The no adverse effects level is defined as impact to the benthic community, not to individual benthic animals or species. The no adverse effects level includes:
 - The Sediment Quality Standards (SQS) criteria in Part III of the rule, WAC 173-204-320.
 - The Sediment Cleanup Objective (SCO) criteria in Part V of the rule, WAC 173-204-562 (Tables III and IV) and 173-204-563 (Tables VI and VII).
- The minor adverse effects level is defined as impact to the benthic community, not to individual benthic animals or species. The minor adverse effects level includes:
 - The Sediment Impact Zone Maximum (SIZMax) criteria in Part IV of the rule, WAC 173-204-420.
 - The Cleanup Screening Level (CSL) in Part V of the rule, WAC 173-204-562 (Tables III and IV) and 173-204-563 (Tables VI and VII).

For sediment in marine and low salinity environments, there are benthic numeric criteria

for 47 chemicals or chemical groups and narrative criteria for chemicals not on the list. Some of the marine chemical criteria are based on dry weight such as metals, while others are normalized with the organic carbon content of the sediment. The marine benthic numeric criteria apply to Parts I – VI of the rule.

For sediment in freshwater environments, there are benthic numeric criteria for 35 chemicals or chemical groups and narrative criteria for chemicals not on the list. These criteria are based on dry weight. The freshwater benthic numeric criteria apply to Part V of the rule.

There are also benthic biological criteria related to acute and chronic effects for both marine and freshwater sediment. These effects are determined by laboratory toxicity tests or benthic abundance tests as compared to reference sediment sites. Both the chemical and biological criteria are used to evaluate sediment quality, but the results of the benthic biological effects tests can override the benthic chemical concentration results. For example, if the sediment sample does not exceed the benthic chemical criteria but the biological tests result in an exceedance(s) of the benthic biological criteria, then the sample would be considered an exceedance of the benthic criteria.

Human Health Criteria. For protection of human health, the SMS contain two different levels of criteria for marine and freshwater sediment for cleanup under Part V of the rule, WAC 173-204-561. This includes:

- The SCO criteria which corresponds to a risk level of one in one million (10^{-6}) for carcinogenic chemicals and a hazard quotient of one for non carcinogenic chemicals.
- The CSL which corresponds to a risk level of one in one hundred thousand (10^{-5}) for carcinogenic chemicals and a hazard

quotient of one for non carcinogenic chemicals.

For Parts III and IV of the rule, the human health criteria remain a narrative standard of “no significant risk to human health” and is determined on a case by case basis.

Higher Trophic Levels Criteria.

For the protection of higher trophic levels, the SMS contains one level of criteria for marine and freshwater sediment, the Sediment Cleanup Objective which is defined as “no adverse effects” level in Part V of the rule, WAC 173-204-564.

What is the authority for the Sediment Management Standards?

The SMS has been adopted under different authorities for different parts of the rule:

- Part V is adopted under the Model Toxics Control Act RCW 70.105D.
- Parts I – IV and Part VI are adopted under the Model Toxics Control Act RCW 70.105D and the Water Pollution Control Act RCW 90.48 as well as other authorities.

What additional resources are there to learn about sediment management and cleanup?

Sediment Management Standards Rule (Chapter 173-204 WAC). You may access the 2013 revised rule here:

<http://www.ecy.wa.gov/programs/tcp/regs/SMS/2013/Adopted-Rule.html>

Sediment Cleanup Users Manual II (SCUM II). Publication number 12-09-057.

This guidance document was originally published in 1991 and a preliminary draft was completed in August 2012. This preliminary draft was posted to Ecology’s website during the SMS draft rule public comment period in 2012. For information on the updated guidance

document, go here:

http://www.ecy.wa.gov/programs/tcp/smu/sed_standards.htm.

Freshwater Standards Technical Report. Publication number 11-09-054. This scientific report was developed to support the adoption of the benthic chemical criteria for freshwater sediment. You may access the document here:

<https://fortress.wa.gov/ecy/publications/summaryPages/1109054.html>

Model Toxics Control Act Law (RCW 70.105D) and Rule (Chapter 173-340 WAC).

You may access the MTCA law and rule here:

<https://fortress.wa.gov/ecy/publications/SummaryPages/9406.html>

Fish Consumption Rates Technical Report. Publication number 12-09-058. You may access information on the development of this technical report and the final report here:

<http://www.ecy.wa.gov/programs/tcp/regs/fish/2012/FCR-doc.html>

Water Pollution Control Act (RCW 90.48) and Water Quality for Surface Waters Rule (Chapter 173-201A WAC). You may access the law and rule here:

<https://fortress.wa.gov/ecy/publications/SummaryPages/0610091.html>

Water Quality for Surface Waters Rule (Chapter 173-201A WAC) Rulemaking:

http://www.ecy.wa.gov/programs/wq/swqs/Currs_wqsruleactiv.html.

About the 2013 Revisions to the Sediment Management Standards Chapter 173-204 WAC

Why did Ecology revise the Sediment Management Standards in 2013?

To improve cleanup of contaminated sediments, Ecology addressed the following issues:

- Integrating requirements for cleanup of contaminated sediments specified in the SMS rule with requirements in the MTCA rule.
- Updating the SMS cleanup decision framework to address bioaccumulative chemicals to protect human and environmental health.
- Adopting chemical and biological benthic criteria for freshwater sediments.
- Clarifying requirements for coordinating cleanup actions and source control measures.

Why were rule changes needed?

Lack of clarity in the SMS rule led to delayed, unpredictable, and inconsistent cleanup decisions. The terminology processes and requirements in the SMS were difficult to reconcile with requirements in the MTCA law and rule. The amendments make the cleanup process more efficient and predictable.

The original SMS rule did not clearly address how to assess human health and ecological risk from chemicals that bioaccumulate in the food chain. The amendments to Part V of the rule add to the SMS decision framework a mechanism for setting standards to protect human health and the environment in both marine and freshwater sediment.

The original SMS included numeric chemical and biological criteria for marine sediments that are protective of the benthic community. The amendments include new chemical and biological criteria for freshwater sediments that are protective of the benthic community.

In the original rule, source control requirements to prevent sediment recontamination following cleanup were difficult to implement. The amendments clarify requirements for coordinating cleanup actions and source control requirements. This will help prevent recontamination and make the requirements for cleanup actions implementable.

What parts of the SMS rule were amended?

As stated at the beginning of this document, the SMS rule consists of six sections, each with a different purpose. The amendments focus on Part V, and address cleanup issues only.

The amendments:

- Integrate the procedural cleanup requirements in the SMS to be consistent with MTCA where appropriate. This includes amending terminology and clarifying remedial investigation and remedy selection requirements.
- Update the cleanup decision framework to address bioaccumulative and other chemicals that pose risks to human health and the environment. The amendments clarify methods and policies for establishing risk-based cleanup standards, establish procedures for incorporating background concentrations, and integrate the requirements in the MTCA and SMS rules for sediment cleanup actions to make cleanup more efficient.
- Clarify existing requirements for coordinating cleanup actions and source

control measures. This clarification was necessary to prevent recontamination following cleanup.

- Add chemical and biological benthic criteria for cleanup of freshwater sediments. The decision-making framework (a cleanup screening level based on minor adverse effects and a sediment cleanup objective based on no adverse effects) is consistent with the marine sediment framework.

When does the amended rule go into effect?

The rule was adopted on February 22, 2013 and becomes effective on September 1, 2013.

How do the amendments address protecting human health from bioaccumulative and other chemicals?

The widespread presence of ubiquitous bioaccumulative chemicals complicates sediment cleanup decisions. Since 2009, the Toxics Cleanup Program engaged in considerable public dialog related to this issue. The amendments incorporate risk-based and background concentrations into the existing SMS “two-tiered” decision framework.

What is the “two-tiered” framework?

The two-tiered framework allows sediment cleanup levels to be set between the sediment cleanup objective (a low concentration that is the long-term sediment quality goal) and the cleanup screening level (a higher concentration that provides an upper bound to the cleanup standard).

Originally the SMS rule allowed the cleanup level to be set between two tiers based on (a) cleanup costs, (b) technical feasibility, and (c) net environmental benefit.

In the amended rule, the cleanup level is set between these two tiers based on (a) technical possibility, and (b) net adverse environmental impacts. However, cleanup costs are still considered in the remedy selection process, consistent with MTCA.

Did Ecology consider the potential increased costs associated with these rule amendments?

Ecology developed a cost-benefit analysis that was open for public comment. Based on this analysis, Ecology determined that:

- The overall cleanup costs will be similar to the original requirements. Original requirements were that cleanups comply with both the SMS and MTCA rules. In some situations cleanup costs may decrease.
- The costs to National Pollutant Discharge Elimination System (NPDES) permitted dischargers that are potentially liable persons may increase due to additional monitoring and analytical requirements necessary to ensure that sediments are not recontaminated.
- The costs to NPDES permitted dischargers (this includes municipal and industrial stormwater and wastewater dischargers) are uncertain and will depend on how Ecology enforces NPDES permits and Total Maximum Daily Load allocations.

To see the cost-benefit analysis please go to:

<https://fortress.wa.gov/ecy/publications/SummaryPages/1309046.html>.

Were fish consumption rates included in the rule amendments?

No. Until July 2012, Ecology planned to include a default fish consumption rate for

calculating sediment cleanup levels to protect human health. However, in order to allow more time to discuss implications to water quality standards, Ecology elected not to include a default fish consumption rate in the SMS. Instead, the rule amendments include a narrative that requires cleanup levels to be based on a Reasonable Maximum Exposure (RME) and that the default RME is a tribal exposure scenario.

What other important issues were addressed in this rulemaking?

The original rule included benthic numeric criteria for marine sediments, but not for freshwater sediments. The amendments include chemical and biological cleanup criteria protective of the freshwater benthic community. The decision-making framework (a cleanup screening level based on minor adverse effects and a sediment cleanup objective based on no adverse effects) is consistent with the existing marine sediment framework.

Is Ecology preparing guidance to assist people involved in sediment cleanup?

Yes. In September 2012, Ecology posted draft guidance to the website so that reviewers of the proposed rule would be informed about how the proposed rule would be implemented. Ecology is now working to revise the guidance document and plans to provide opportunity for interested parties to review the document before it is finalized.

What kind of advisory group process did Ecology use in developing the rule amendments?

Three different advisory groups provided early input and feedback on rule-making issues,

including review of early preliminary draft rule language.

Sediment Workgroup. This group consisted of eight scientists and technical experts who specialize in sediment management and cleanup. It included tribal, local, and federal government representatives; ports; and environmental consultants. The group met eight times between December 2009 and December 2010.

Meetings were open to the public and meeting materials and notes are posted on the Ecology website.

<http://www.ecy.wa.gov/programs/tcp/regs/2009/MTCA/SedMtgGroupInfo/SGMtgInfo/SediWGMeetingInfo.html>

MTCA/SMS Advisory Group. This group consisted of 17 members having a broad range of interests and affiliations. It included representatives from tribes; state, local, and federal governments; regulated entities (including liable parties and dischargers); environmental groups; and environmental consultants. This group was formed before the Governor issued Executive Order 10-06, and included discussion of both MTCA and SMS cleanup-related technical and policy issues. The group met eight times between December 2009 and December 2010.

Meetings were open to the public and meeting materials and notes are posted on the Ecology website.

<http://www.ecy.wa.gov/programs/tcp/regs/2009/MTCA/AdvGrpMeetingInfo/AdvGrpMtgSchedule.html>

Sediment Cleanup Advisory Committee. This 26-member committee was formed to specifically address SMS amendments and provide feedback on preliminary draft rule language. This committee included members from the advisory groups mentioned above plus additional members from industry; ports,

federal, state, and local governments; tribes; environmental groups; and environmental consultants. This committee met three times from October 2011 through December 2011.

Meetings were open to the public and meeting materials and notes are posted on the Ecology website.

<http://www.ecy.wa.gov/programs/tcp/regs/2011-SMS/adv-comm/ac-mtg-info.html>

Ecology presented the key issues, the proposed SMS rule framework, and preliminary draft rule language to the committees and asked members for input and feedback on:

- Creating the decision framework for addressing protection of human health and the environment when establishing sediment cleanup levels for bioaccumulative chemicals that includes background concentrations.
- The relationship between cleanup and source control issues.
- Issues related to resolving liability for sediment cleanup units located within larger bay-wide sites.
- The relationship to agency-wide regional source reduction initiatives
- Freshwater sediment standards for protection of the benthic community.

The committee reviewed preliminary rule proposals and discussed implementation using case studies as examples.

How have tribes provided input on this process?

Ecology understands the importance of these issues to tribes and acknowledges the considerable input provided by tribes and tribal representatives on many of the technical and policy issues. Representatives from several tribes participated in the three different advisory

groups, and Ecology held additional meetings with tribal representatives during this process. Ecology honors our Government-to-Government relationships and will continue looking for opportunities to work together.

Did Ecology submit the amended SMS rule to EPA for approval?

Ecology has concluded that Part V of the SMS rule does not require EPA review under the Clean Water Act. Part V, Sediment Cleanup Standards, has been adopted solely under the Model Toxics Control Act RCW 70.105D which provides statutory authority for cleanup-related decisions and will not be used for federal Clean Water Act purposes. Parts I – IV of the amended SMS rule were submitted to the EPA for review and approval as they are considered federally approved water quality standards.

Ecology is also updating the Surface Water Quality Standards: what is the relationship between these various efforts?

Ecology is working on two rules for the Water Quality Standards for Surface Waters of the State of Washington, Chapter 173-201A WAC:

- Establishing new human health criteria. Washington's surface water quality standards currently lack human health criteria, so Ecology is required to operate under the federal criteria established in EPA's 1992 National Toxics Rule. These federal criteria are out-of-date. EPA requested that Washington use new science and information to adopt updated human health criteria into our state's surface water quality standards.
- Providing new implementation and compliance tools for dischargers. Ecology recognizes the need to modernize the compliance and implementation tools

available for dischargers and has begun a process to create advanced regulatory tools.

For information on how these efforts fit together see: <http://www.ecy.wa.gov/toxics/fish.html>

Ecology recently published a Technical Support Document to assist in establishing a clear understanding of Washington fish consumption data. Although cleanup standards and water quality standards both include fish consumption rates when addressing human health, the requirements are based on different statutes and include different considerations.

Will amendments to the SMS rule affect permitted dischargers?

The SMS rule amendments will not substantially change the conditions in existing discharge permits. The SMS rule amendments apply to cleanup sites and cleanup decisions. Part V, Sediment Cleanup Standards, is the focus of the rule revisions. Part IV, which includes requirements for NPDES permitted dischargers, has not been substantively amended.

Potentially liable persons for site cleanup will need to ensure that discharges under their control do not cause recontamination. Other permitted discharges will not be significantly affected at this time, and Ecology currently does not have plans to address these dischargers outside the TMDL and current NPDES enforcement process.

How did the public submit comments on the amendments to the SMS rule?

Public comments were accepted from August 15, 2012 through October 29, 2012. For more information please visit: <http://www.ecy.wa.gov/programs/tcp/regs/SMS/2012/proposedRule.html>

What additional resources are there to learn about the SMS rule?

Sediment Management Standards Rule

(Chapter 173-204 WAC). You may access the 2013 revised rule here:

<http://www.ecy.wa.gov/programs/tcp/regs/SMS/2013/Adopted-Rule.html>

Sediment Cleanup Users Manual II (SCUM II).

Publication number 12-09-057. This guidance document was originally published in 1991 and a preliminary draft was completed in August 2012.

For information on the updated guidance document, go here:

http://www.ecy.wa.gov/programs/tcp/smu/sed_standards.htm.

Freshwater Standards Technical Report.

Publication number 11-09-054. This scientific report was developed to support the adoption of the benthic chemical criteria for freshwater sediment. You may access the report here:

<https://fortress.wa.gov/ecy/publications/summaryPages/1109054.html>

Model Toxics Control Act Law (RCW 70.105D) and Rule (Chapter 173-340 WAC).

You may access the MTCA law and rule here:

<https://fortress.wa.gov/ecy/publications/SummaryPages/9406.html>

Fish Consumption Rates Technical Report.

Publication number 12-09-058. You may access information about this technical report here:

<http://www.ecy.wa.gov/programs/tcp/regs/fish/2012/FCR-doc.html>.



DEPARTMENT OF
ECOLOGY
State of Washington

Sediment Management Standards

Chapter 173-204 WAC

Toxics Cleanup Program
Washington State Department of Ecology
Olympia, Washington

Sediment Management Standards**Table of Contents****PART I – GENERAL INFORMATION**

173-204-100	Authority and purpose.....	3
173-204-110	Applicability.....	5
173-204-120	Antidegradation and designated use policies.	7
173-204-130	Administrative policies.	9

PART II – DEFINITIONS

173-204-200	Definitions.....	15
-------------	------------------	----

PART III – SEDIMENT QUALITY STANDARDS

173-204-300	Purpose.....	21
173-204-310	Sediment quality standards designation procedures.....	23
173-204-315	Confirmatory marine sediment biological tests.	25
173-204-320	Marine sediment quality standards.....	27
173-204-330	Low salinity sediment quality standards.	31
173-204-340	Freshwater sediment quality standards.	33
173-204-350	Sediment quality standards inventory.	35

PART IV – SEDIMENT SOURCE CONTROL

173-204-400	General considerations.	39
173-204-410	Sediment quality goal and sediment impact zone applicability.	43
173-204-412	Marine finfish rearing facilities.....	47
173-204-415	Sediment impact zones.....	49
173-204-420	Sediment impact zone maximum criteria.....	59

PART V – SEDIMENT CLEANUP STANDARDS

173-204-500	Sediment cleanup decision process and policies.....	67
173-204-505	Definitions.....	73
173-204-510	Identifying sediment station clusters of potential concern.....	77
173-204-520	Hazard assessment and site identification.....	79
173-204-530	Evaluation and listing of sites.	81
173-204-540	Types of cleanup and authority.	83
173-204-550	Remedial investigation and feasibility study.	85
173-204-560	Sediment cleanup standards--General requirements.	91
173-204-561	Sediment cleanup levels based on protection of human health.....	95
173-204-562	Sediment cleanup levels based on protection of the benthic community in marine and low salinity sediment.....	97

Adoption Date: February 22, 2013

Page i

Sediment Management Standards

173-204-563	Sediment cleanup levels based on protection of the benthic community in freshwater sediment.....	105
173-204-564	Sediment cleanup levels based on protection of higher trophic level species.	115
173-204-570	Selection of cleanup actions.	117
173-204-575	Cleanup action decisions.	121
173-204-590	Sediment recovery zones.	123

PART VI – SAMPLING AND TESTING PLANS/RECORDKEEPING

173-204-600	Sampling and testing plan standards.	129
173-204-610	Records management.	131
173-204-620	Severability.....	133

Sediment Management Standards

List of Tables

PART III – SEDIMENT QUALITY STANDARDS

Table I:	Marine Sediment Quality Standards--Chemical Criteria.....	28
-----------------	---	----

PART IV – SEDIMENT SOURCE CONTROL

Table 1:	Puget Sound Reference Total Organic Carbon Values.....	47
Table II:	Puget Sound Marine Sediment Impact Zones – Maximum Chemical Criteria	61

PART V – SEDIMENT CLEANUP STANDARDS

Table III:	Marine Sediment Cleanup Objectives and Cleanup Screening Levels Chemical Criteria	99
Table IV:	Marine Sediment Cleanup Objectives and Cleanup Screening Levels Biological Criteria.....	102
Table V:	Types of Marine Sediment Biological Tests, Species, and Applicable Endpoints.	104
Table VI:	Freshwater Sediment Cleanup Objectives and Cleanup Screening Levels Chemical Criteria	108
Table VII:	Freshwater Sediment Cleanup Objectives and Cleanup Screening Levels Biological Criteria.....	111
Table VIII:	Types of Freshwater Sediment Biological Tests, Species, and Applicable Endpoints	113

Sediment Management Standards

This page intentionally blank.

Adoption Date: February 22, 2013

Page iv

Sediment Management Standards

PART I

GENERAL INFORMATION

WAC 173-204-100 through 173-204-130

Sediment Management Standards

WAC 173-204-100

**PART I
GENERAL INFORMATION**

WAC 173-204-100 Authority and purpose.

- (1) This chapter is promulgated under the authority of chapter 90.48 RCW, the Water Pollution Control Act; chapter 70.105D RCW, the Model Toxics Control Act; chapter 90.70 RCW, the Puget Sound Water Quality Authority Act; chapter 90.52 RCW, the Pollution Disclosure Act of 1971; chapter 90.54 RCW, the Water Resources Act of 1971; and chapter 43.21C RCW, the state Environmental Policy Act, to establish marine, low salinity and freshwater surface sediment management standards for the state of Washington.
- (2) The purpose of this chapter is to reduce and ultimately eliminate adverse effects on biological resources and significant health threats to humans from surface sediment contamination by:
 - (a) Establishing standards for the quality of surface sediments;
 - (b) Applying these standards as the basis for management and reduction of pollutant discharges; and
 - (c) Providing a management and decision process for the cleanup of contaminated sediments.
- (3) Part III, Sediment quality standards of this chapter provides chemical concentration criteria, biological effects criteria, human health criteria, and other toxic, radioactive, biological, or deleterious substances criteria which identify surface sediments that have no adverse effects, including no acute or chronic adverse effects on biological resources and no significant health risk to humans, as defined in this regulation. The sediment quality standards provide a regulatory and management goal for the quality of sediments throughout the state.
- (4) The sediment criteria of WAC 173-204-320 through 173-204-340 shall constitute surface sediment quality standards and be used to establish an inventory of surface sediment sampling stations where the sediments samples taken from these stations are determined to pass or fail the applicable sediment quality standards.
- (5) Part IV, Sediment source control standards of this chapter shall be used as a basis for controlling the effects of point and nonpoint source discharges to sediments through the National Pollutant Discharge Elimination System (NPDES) federal permit program, state water quality management permit programs, issuance of administrative orders or other means determined appropriate by the department. The source control standards establish discharge sediment monitoring requirements and criteria for establishment and maintenance of sediment impact zones.
- (6) Part V, Sediment cleanup standards of this chapter establishes administrative procedural requirements and criteria to identify, screen, evaluate and prioritize, and cleanup contaminated surface sediment sites. The sediment cleanup standards of WAC 173-204-500 through 173-204-590 shall be used pursuant to authority established under chapter 70.105D RCW.

Adoption Date: February 22, 2013

Page 3

Sediment Management Standards

WAC 173-204-100

- (7) This chapter establishes and defines a goal of minor adverse effects as the maximum level of sediment contamination allowed in sediment impact zones under the provisions of Part IV, Sediment source control standards and as the cleanup screening levels for identification of sediment cleanup sites and as the minimum cleanup levels to be achieved in all cleanup actions under Part V, Sediment cleanup standards.
- (8) Local ordinances establishing requirements for the designation and management of marine, low salinity and freshwater sediments shall not be less stringent than this chapter.

Note: All codes, standards, statutes, rules or regulations cited in this chapter are available for inspection at the Department of Ecology, P.O. Box 47703, Olympia, Washington 98504-7703.

[Statutory Authority: Chapters 70.105D and 90.48 RCW. 13-06-014 (Order 08-07), § 173-204-100, filed 2/25/13, effective 9/1/13. Statutory Authority: RCW 90.48.220. 96-02-058, § 173-204-100, filed 12/29/95, effective 1/29/96. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-100, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards**WAC 173-204-110****WAC 173-204-110 Applicability.**

- (1) The sediment quality standards of WAC 173-204-300 through 173-204-315, and 173-204-350, and the sediment cleanup standards of WAC 173-204-500 through 173-204-575 shall apply to all surface sediments.
- (2) The sediment quality standards of WAC 173-204-320, 173-204-330, and 173-204-340 and the applicable sediment cleanup standards of WAC 173-204-560 shall apply to marine, low salinity and freshwater surface sediments, respectively.
- (3) The source control standards of WAC 173-204-400 through 173-204-420 shall apply to each person's actions which exposes or resuspends surface sediments which exceed, or otherwise cause or potentially cause surface sediments to exceed, the applicable standards of WAC 173-204-320 through 173-204-340.
- (4) The sediment recovery zone standards of WAC 173-204-590 shall apply to each person's cleanup action decision made pursuant to WAC 173-204-570 and 173-204-575 where the selected cleanup action leaves in place marine, low salinity, or freshwater sediments that exceed the applicable sediment cleanup standards of WAC 173-204-560.
- (5) The sediment quality standards of WAC 173-204-320 through 173-204-340 shall not apply:
 - (a) Within a sediment impact zone as authorized by the department under WAC 173-204-415; or
 - (b) Within a sediment recovery zone as authorized by the department under WAC 173-204-590; or
 - (c) To particulates suspended in the water column; or
 - (d) To particulates suspended in a permitted effluent discharge; or
 - (e) To Part V of this chapter.
- (6) Nothing in this chapter shall constrain the department's authority to make appropriate sediment management decisions on a case-specific basis using best professional judgment and latest scientific knowledge for cases where the standards of this chapter are reserved or standards are not available.

[Statutory Authority: Chapters 70.105D and 90.48 RCW. 13-06-014 (Order 08-07), § 173-204-110, filed 2/25/13, effective 9/1/13. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-110, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards

WAC 173-204-110

This page intentionally blank.

Adoption Date: February 22, 2013

Page 6

Sediment Management Standards**WAC 173-204-120****WAC 173-204-120 Antidegradation and designated use policies.**

- (1) Antidegradation policy. The antidegradation policy of the state of Washington as generally guided by chapters 90.48 and 90.54 RCW, is applicable to any person's new or increased activity and shall apply to this chapter as follows:
 - (a) Existing beneficial uses shall be maintained and protected and no further degradation which would interfere with or become injurious to existing beneficial uses shall be allowed.
 - (b) No degradation of existing sediment quality shall be allowed of waters constituting an outstanding national resource, such as waters of national and state parks and scenic and recreation areas, wildlife refuges, and waters of exceptional recreational or ecological significance.
 - (c) Whenever surface sediments are of a higher quality (i.e., lower chemical concentrations or adverse biological response) than the criteria assigned to said sediments, the existing surface sediment quality shall be protected and waste and other materials and substances shall not be allowed to contaminate such sediments or reduce the existing sediment quality thereof, except in those instances where:
 - (i) It is clear, after satisfactory public participation and intergovernmental coordination, that overriding considerations of the public interest will be served;
 - (ii) All wastes and other materials and substances proposed for discharge that may contaminate such sediments are provided with all known, available and reasonable methods of prevention, control, and treatment and/or best management practices;
 - (iii) The reduction of existing surface sediment quality is authorized by the department; and
 - (iv) Existing beneficial uses are maintained and protected, and no degradation which would interfere with and/or become injurious to existing sediment beneficial uses and/or causes long-term, irreparable harm to the environment is allowed.
- (2) Designated use policy. The policy of the department and the purpose of this chapter shall be to manage waste discharges and sediment quality so as to protect existing beneficial uses and move towards attainment of designated beneficial uses as specified in section 101 (a)(2) of the federal Clean Water Act (33 U.S.C. 1251, et seq.) and chapter 173-201 WAC, the Water quality standards for surface waters of the state of Washington. This policy is applicable to any person's existing or proposed actions which may affect surface sediment quality.

[Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-120, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards

WAC 173-204-120

This page intentionally blank.

Adoption Date: February 22, 2013

Page 8

Sediment Management Standards**WAC 173-204-130**

WAC 173-204-130 Administrative policies. The department shall implement this chapter in accordance with the following policies:

- (1) The department shall seek to implement, and as necessary modify this chapter to protect biological resources and human health consistent with WAC 173-204-100(2). To implement the intent of this subsection, the department shall use methods that accurately reflect the latest scientific knowledge consistent with the definitions contained in WAC 173-204-200 and 173-204-505, as applicable.
- (2) At the interface between surface sediments, groundwater or surface water, the applicable standards shall depend on which beneficial use is or could be adversely affected, as determined by the department. If beneficial uses of more than one resource are affected, the most restrictive standards shall apply.
- (3) It shall be the goal of the department to modify this chapter so that methods such as confirmatory biological tests, sediment impact zone models, use of contaminated sediment site models, etc., continue to accurately reflect the latest scientific knowledge as established through ongoing validation and refinement.
- (4) Any person or the department may propose an alternate technical method to replace or enhance the application of a specific technical method required under this chapter. Using best professional judgment, the department shall provide advance review and approval of any alternate technical method proposed prior to its application. Application and use of alternate technical methods shall be allowed when the department determines that the technical merit of the resulting decisions will improve the department's ability to implement and meet the intent of this chapter as described in WAC 173-204-100(2), and will remain consistent with the scientific intent of definitions contained in WAC 173-204-200 and 173-204-505. The department shall maintain a record of the department's decisions concerning application for use of alternate technical methods pursuant to this subsection. The record shall be made available to the public on request.
- (5) Intergovernmental coordination. The department shall ensure appropriate coordination and consultation with federally recognized Indian tribes and local, state, and federal agencies to provide information on and to implement this chapter.
- (6) The department shall conduct an annual review of this chapter, and modify its provisions every three years, or as necessary. Revision to this chapter shall be made pursuant to the procedures established within chapter 34.05 RCW, the Administrative Procedure Act.
- (7) Review of scientific information. When evaluating this chapter for necessary revisions, the factors the department shall consider include:
 - (a) New or additional scientific information which is available relating surface sediment chemical quality to acute or chronic adverse effects on biological resources as defined in WAC 173-204-200 (1) and (7);
 - (b) New or additional scientific information which is available relating human health risk to marine, low salinity, or freshwater surface sediment chemical contaminant levels;
 - (c) New or additional scientific information which is available relating levels of other toxic, radioactive, biological and deleterious substances in marine, low salinity, or freshwater sediments to acute or chronic adverse effects on biological resources, or to

Sediment Management Standards**WAC 173-204-130**

- a significant health risk to humans;
- (d) New state or federal laws which have established environmental or human health protection standards applicable to surface sediment; or
 - (e) Scientific information which has been identified for addition, modification or deletion by a scientific review process established by the department.
- (8) Public involvement and education. The goal of the department shall be to provide timely information and meaningful opportunities for participation by the public in the annual review conducted by the department under subsection (6) of this section, and any modification of this chapter. To meet the intent of this subsection the department shall:
- (a) Provide public notice of the department's decision regarding the results of its annual review of this chapter, including:
 - (i) The department's findings for the annual review factors identified in subsection (7) of this section;
 - (ii) The department's decision regarding the need for modification of this chapter based on its annual review; and
 - (iii) Identification of a time period for public opportunity to comment on the department's findings and decisions pursuant to this subsection.
 - (b) Provide public notice by mail or by additional procedures determined necessary by the department which may include:
 - (i) Newspaper publication;
 - (ii) Other news media;
 - (iii) Press releases;
 - (iv) Fact sheets;
 - (v) Publications;
 - (vi) Any other method as determined by the department.
 - (c) Conduct public meetings as determined necessary by the department to educate and inform the public regarding the department's annual review determinations and decisions.
 - (d) Comply with the rule making and public participation requirements of chapter 34.05 RCW, the Administrative Procedure Act, for any revisions to this chapter.
- (9) Test sediments evaluated for compliance with the sediment quality standards of WAC 173-204-320 through 173-204-340 and/or the sediment impact zone maximum criteria of WAC 173-204-420 and/or the sediment cleanup standards of WAC 173-204-560 shall be sampled and analyzed using the Puget Sound Protocols or other methods approved by the department. Determinations made pursuant to this chapter shall be based on sediment chemical and/or biological data that were developed using an appropriate quality assurance/quality control program, as determined by the department.
- (10) The statutory authority for decisions under this chapter shall be clearly stated in the decision documents prepared pursuant to this chapter. The department shall undertake

Sediment Management Standards

WAC 173-204-130

enforcement actions consistent with the stated authority under which the action is taken. The process for judicial review of these decisions shall be pursuant to the statutes under which the action is being taken.

- (11) When the department identifies this chapter as an applicable, or relevant and appropriate requirement for a federal cleanup action under the Comprehensive Environmental Response, Compensation and Liability Act, the department shall identify the entire contents of this chapter as the appropriate state requirement.

[Statutory Authority: Chapters 70.105D and 90.48 RCW. 13-06-014 (Order 08-07), § 173-204-130, filed 2/25/13, effective 9/1/13. Statutory Authority: RCW 90.48.220. 96-02-058, § 173-204-130, filed 12/29/95, effective 1/29/96. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-130, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards

WAC 173-204-130

This page intentionally blank.

Adoption Date: February 22, 2013

Page 12

Sediment Management Standards

PART II

DEFINITIONS

WAC 173-204-200

Sediment Management Standards

WAC 173-204-200

PART II
DEFINITIONS

WAC 173-204-200 Definitions.

For the purpose of this chapter, the following definitions shall apply unless the context indicates otherwise:

- (1) **"Acute"** means measurements of biological effects using surface sediment bioassays conducted for time periods that are relatively short in comparison to the life cycle of the test organism. Acute effects may include mortality, larval abnormality, or other endpoints determined appropriate by the department.
- (2) **"Amphipod"** means crustacean of the Class Amphipoda, e.g., Rhepoxynius abronius, Ampelisca abdita, Eohaustorius estuarius, or Hyalella azteca.
- (3) **"Appropriate biological tests"** means only tests designed to measure directly, or through established predictive capability, biologically significant adverse effects to the established or potential benthic or aquatic resources at a given location, as determined by rule by the department.
- (4) **"Beneficial uses"** means uses of waters of the state which include, but are not limited to, use for domestic, stock watering, industrial, commercial, agricultural, irrigation, mining, fish and wildlife maintenance and enhancement, recreation, generation of electric power, and preservation of environmental and aesthetic values, and all other uses compatible with the enjoyment of the public waters of the state.
- (5) **"Best management practices" or "BMPs"** means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of surface sediments of the state. BMPs also include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or water disposal, or drainage from raw material storage.
- (6) **"Bioassay"** means a test procedure that measures the response of living plants, animals, or tissues to a sediment sample.
- (7) **"Chronic"** means measurements of biological effects using sediment bioassays conducted for, or simulating, prolonged exposure periods of not less than one complete life cycle, evaluations of indigenous field organisms for long-term effects, assessment of biological effects resulting from bioaccumulation and biomagnification, and/or extrapolated values or methods for simulating effects from prolonged exposure periods. Chronic effects may include mortality, reduced growth, impaired reproduction, histopathological abnormalities, adverse effects to birds and mammals, or other endpoints determined appropriate by the department.
- (8) **"Contaminated sediment"** means surface sediments exceeding the applicable sediment quality standards in WAC 173-204-320 through 173-204-340 or the applicable sediment cleanup standards in WAC 173-204-560.
- (9) **"Control sediment sample"** means a surface sediment sample which is relatively free of

Sediment Management Standards**WAC 173-204-200**

contamination and is physically and chemically characteristic of the area from which bioassay test animals are collected. Control sediment sample bioassays provide information concerning a test animal's tolerance for stress due to transportation, laboratory handling, and bioassay procedures. Control sediment samples cannot exceed the applicable sediment quality standards of WAC 173-204-320 through 173-204-340 or the applicable criteria in WAC 173-204-562 and 173-204-563.

- (10) **"Department"** means the department of ecology.
- (11) **"Freshwater sediments"** means surface sediments in which the sediment pore water contains less than or equal to 0.5 parts per thousand salinity.
- (12) **"Low salinity sediments"** means surface sediments in which the sediment pore water contains greater than 0.5 parts per thousand salinity and less than 25 parts per thousand salinity.
- (13) **"Marine finfish rearing facilities"** means those private and public facilities located within state waters where finfish are fed, nurtured, held, maintained, or reared to reach the size of release or for market sale.
- (14) **"Marine sediments"** means surface sediments in which the sediment pore water contains 25 parts per thousand salinity or greater.
- (15) **"Minor adverse effects"** means a level of effects that:
 - (a) Has been determined by rule by the department, except in cases subject to WAC 173-204-110(6); and
 - (b) Meets the following criteria:
 - (i) An acute or chronic adverse effect to biological resources as measured by a statistically and biologically significant response relative to reference or control, as appropriate, in no more than one appropriate biological test as defined in WAC 173-204-200(3); or
 - (ii) A statistically and biologically significant response that is significantly elevated relative to reference or control, as appropriate, in any appropriate biological test as defined in WAC 173-204-200(3); or
 - (iii) Biological effects per (b)(i) or (ii) of this subsection as predicted by exceedance of an appropriate chemical or other deleterious substance standard, except where the prediction is overridden by direct biological testing evidence pursuant to (b)(i) and (ii) of this subsection; and
 - (c) Does not result in significant human health risk as predicted by exceedance of an appropriate chemical, biological, or other deleterious substance standard.
- (16) **"No adverse effects"** means a level of effects that:
 - (a) Has been determined by rule by the department, except in cases subject to WAC 173-204-110(6); and
 - (b) Meets the following biological criteria:
 - (i) No acute or chronic adverse effects to biological resources as measured by a statistically and biologically significant response relative to reference or control,

Sediment Management Standards**WAC 173-204-200**

as appropriate, in any appropriate biological test as defined in WAC 173-204-200(3); and

- (ii) No acute or chronic adverse biological effect per (b)(i) of this subsection as predicted by exceedance of an appropriate chemical or other deleterious substance standard, except where the prediction is overridden by direct biological testing evidence pursuant to (b)(i) of this subsection; and
 - (iii) Does not result in significant human health risk as predicted by exceedance of an appropriate chemical, biological, or other deleterious substance standard.
- (17) **"Other toxic, radioactive, biological, or deleterious substances"** means, except for purposes of Part V of this chapter, contaminants which are not specifically identified in the sediment quality standards chemical criteria of WAC 173-204-320 through 173-204-340 (e.g., organic debris, tributyltin, DDT, etc.).
- (18) **"Person"** means an individual, firm, corporation, association, partnership, consortium, joint venture, commercial entity, industry, private corporation, port district, special purpose district, irrigation district, unit of local government, state government agency, federal government agency, Indian tribe, or any other entity whatsoever.
- (19) **"Practicable"** means, except for purposes of Part V of this chapter, able to be completed in consideration of environmental effects, technical feasibility and cost.
- (20) **"Puget Sound basin" or "Puget Sound"** means:
- (a) Puget Sound south of Admiralty Inlet, including Hood Canal and Saratoga Passage;
 - (b) The waters north to the Canadian border, including portions of the Strait of Georgia;
 - (c) The Strait of Juan de Fuca south of the Canadian border; and
 - (d) All the lands draining into these waters as mapped in water resources inventory areas numbers 1 through 19, set forth in water resources management program established pursuant to the Water Resources Act of 1971, chapter 173-500 WAC.
- (21) **"Puget Sound protocols"** means *Puget Sound Estuary Program. 1986. As amended. Recommended Protocols for Measuring Selected Environmental Variables in Puget Sound, U.S. Environmental Protection Agency, Region 10, Seattle, WA (looseleaf).*
- (22) **"Reference sediment sample"** means a surface sediment sample which serves as a laboratory indicator of a test animal's tolerance to important natural physical and chemical characteristics of the sediment, e.g., grain size, organic content. Reference sediment samples represent the nonanthropogenically affected background surface sediment quality of the sediment sample. Reference sediment samples cannot exceed the applicable sediment quality standards of WAC 173-204-320 through 173-204-340 or the applicable criteria of WAC 173-204-562 and 173-204-563.
- (23) **"Sediment impact zone"** means an area where the applicable sediment quality standards of WAC 173-204-320 through 173-204-340 are exceeded due to ongoing permitted or otherwise authorized wastewater, storm water, or nonpoint source discharges and authorized by the department within a federal or state wastewater or storm water discharge permit, or other formal department authorization.

Sediment Management Standards

WAC 173-204-200

- (24) **"Surface sediments"** or **"sediment(s)"** means, except for purposes of Part V of this chapter, settled particulate matter located in the predominant biologically active aquatic zone, or exposed to the water column. Sediment(s) also includes settled particulate matter exposed by human activity (e.g., dredging) to the biologically active aquatic zone or to the water column.
- (25) **"Test sediment"** means a sediment sample that is evaluated for compliance with the sediment quality standards of WAC 173-204-320 through 173-204-340, the sediment impact zone maximum criteria of WAC 173-240-420 [WAC 173-204-420], or the applicable criteria of WAC 173-204-560.

[Statutory Authority: Chapters 70.105D and 90.48 RCW, 13-06-014 (Order 08-07), § 173-204-200, filed 2/25/13, effective 9/1/13. Statutory Authority: RCW 90.48.220, 96-02-058, § 173-204-200, filed 12/29/95, effective 1/29/96. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW, 91-08-019 (Order 90-41), § 173-204-200, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards

PART III
SEDIMENT QUALITY STANDARDS
WAC 173-204-300 through 173-204-350

Sediment Management Standards

WAC 173-204-300

**PART III
SEDIMENT QUALITY STANDARDS**

WAC 173-204-300 Purpose.

The sediment quality standards of WAC 173-204-320 through 173-204-340 include chemical concentration criteria, biological effects criteria, human health criteria, other toxic, radioactive, biological, or deleterious substances criteria, and nonanthropogenically affected sediment quality criteria which are used to identify sediments that have no adverse effects on biological resources, and correspond to no significant health risk to humans. Designation determinations using the sediment quality standards of WAC 173-204-320 through 173-204-340 shall be conducted as stipulated in WAC 173-204-310, Sediment quality standards designation procedures.

[Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-300, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards

WAC 173-204-300

This page intentionally blank.

Adoption Date: February 22, 2013

Page 22

Sediment Management Standards**WAC 173-204-310****WAC 173-204-310 Sediment quality standards designation procedures.**

Any person may use these procedures to determine a sediment's designation using the applicable sediment quality standards of WAC 173-204-320 through 173-204-340. Any person who designates test sediments using the procedures of this section shall meet the sampling and testing plan requirements of WAC 173-204-600 and records management requirements of WAC 173-204-610. Test sediments designated using the procedures of this section shall be sampled and analyzed using the Puget Sound protocols or other methods approved by the department, and shall use an appropriate quality assurance/quality control program, as determined by the department. A sediment sample that passes the initial designation procedures is designated as complying with the applicable sediment quality standards of WAC 173-204-320 through 173-204-340, until such time as any person or the department confirms the sediment designation as failing the applicable sediment quality standards of WAC 173-204-320 through 173-204-340. A sediment sample that fails the initial designation procedures is designated as not complying with the applicable sediment quality standards of WAC 173-204-320 through 173-204-340, until such time as any person or the department confirms the sediment designation as passing the applicable sediment quality standards of WAC 173-204-320 through 173-204-340. A sediment sample that passes or fails the confirmatory designation procedures is designated as such under the procedures of WAC 173-204-310. Sediments shall be designated with the applicable sediment quality standards of WAC 173-204-320 through 173-204-340 as follows:

- (1) **Initial designation.** Sediments that have been chemically analyzed for the applicable chemical concentration criteria of WAC 173-204-320 through 173-204-340 shall be designated as follows:
 - (a) Sediments with chemical concentrations equal to or less than all the applicable chemical and human health criteria are designated as having no adverse effects on biological resources, and not posing a significant health threat to humans, and pass the applicable sediment quality standards of WAC 173-204-320 through 173-204-340.
 - (b) Sediments with chemical concentrations which exceed any one applicable chemical or human health criterion in WAC 173-204-320 through 173-204-340 are designated as having adverse effects on biological resources or posing significant human health threats, and fail the sediment quality standards of WAC 173-204-320 through 173-204-340, pending confirmatory designation.
- (2) **Confirmatory designation.** Any person or the department may confirm the designation of sediments which have either passed or failed initial designation procedures listed in subsection (1) of this section using the applicable biological testing of WAC 173-204-315, as required below. Sediment samples that pass all the required confirmatory biological tests are designated as passing the applicable sediment quality standards of WAC 173-204-320 through 173-204-340, notwithstanding the sediment's previous initial designation under subsection (1) of this section. Any sediment sample which fails any one of the required confirmatory biological tests shall be designated as failing the applicable sediment quality standards of WAC 173-204-320 through 173-204-340, notwithstanding the sediment's previous initial designation under subsection (1) of this section. The confirmatory biological test standards are described below.
 - (a) To confirm the designation of a sediment which either passed or failed any applicable

Sediment Management Standards**WAC 173-204-310**

chemical concentration criterion established in WAC 173-204-320 through 173-204-340, the sediment shall be tested for:

- (i) Two of the acute effects biological tests described in the applicable standards of WAC 173-204-315; and
 - (ii) One of the chronic effects biological tests described in the applicable standards of WAC 173-204-315.
- (b) Sediments with chemical concentrations which either passed or failed any applicable human health criterion of WAC 173-204-320 through 173-204-340 shall be eligible for confirmatory designation as follows: Reserved: The department shall determine on a case-by-case basis the criteria, methods, and procedures necessary to meet the intent of this chapter.
- (3) Initial and confirmatory designation of sediments which contain other toxic, radioactive, biological, or deleterious substances. Sediments which contain other toxic, radioactive, biological, or deleterious substances, as defined in WAC 173-204-200(17), shall be designated by the department using the following procedures.
- (a) The department shall:
 - (i) Identify individual contaminants of concern;
 - (ii) Identify appropriate and practicable sampling and analysis methodologies;
 - (iii) Identify test interpretation standards for initial and confirmatory designation; and
 - (iv) Identify acceptable levels of sediment contamination for sediments which contain other toxic, radioactive, biological, or deleterious substances.
 - (b) Where sediment containing other toxic, radioactive, biological or deleterious substances may also be contaminated by chemicals identified in WAC 173-204-320 through 173-204-340, the department shall require application of the appropriate tests and standards of WAC 173-204-320 through 173-204-340, as determined by the department, in addition to any requirements developed pursuant to (a) of this subsection.
 - (c) The department may use all or some of the sediment biological tests of WAC 173-204-320 through 173-204-340 to designate sediments with other toxic, radioactive, biological or deleterious substances in cases where those tests are technically appropriate, as determined by the department.

[Statutory Authority: Chapters 70.105D and 90.48 RCW. 13-06-014 (Order 08-07), § 173-204-310, filed 2/25/13, effective 9/1/13. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-310, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards**WAC 173-204-315****WAC 173-204-315 Confirmatory marine sediment biological tests.**

- (1) The following five acute and chronic effects biological tests shall be used to confirm designation of Puget Sound marine sediments using the procedures described in WAC 173-204-310(2). Use of alternate biological tests shall be subject to the review and approval of the department using the procedures of WAC 173-204-130(4).
 - (a) **Acute effects tests.**
 - (i) **Amphipod:** Ten-day mortality sediment bioassay for the Amphipod, i.e., *Rhepoxynius abronius*, *Ampelisca abdita*, or *Eohaustorius estuarius*.
 - (ii) **Larval:** Any one of the following mortality/abnormality sediment bioassays:
 - (A) *Crassostrea gigas*, i.e., Pacific oyster;
 - (B) *Mytilus (edulis) galloprovincialis*, i.e., Blue mussel;
 - (C) *Strongylocentrotus purpuratus*, i.e., Purple sea urchin;
 - (D) *Strongylocentrotus droebachiensis*, i.e., Green sea urchin; or
 - (E) *Dendraster excentricus*, i.e., Sand dollar.
 - (b) **Chronic effects tests.**
 - (i) **Benthic infaunal abundance:** Abundance of the following major taxa: Class Crustacea, Class Polychaeta, and Phylum Mollusca.
 - (ii) **Juvenile polychaete:** Twenty-day growth rate of the juvenile polychaete *Neanthes arenaceodentata*; or
 - (iii) **Microtox saline extract:** Decreased luminescence from the bacteria *Vibrio fischeri* after a fifteen minute exposure.
- (2) **Performance standards for control and reference sediment biological test results.** The biological tests of this section shall not be considered valid unless test results for the appropriate control and reference sediments meet the performance standards of (a) through (e) of this subsection. The department may reject the results of a reference sediment biological test based on unacceptably high variability.
 - (a) **Amphipod:** The control sediment shall have less than ten percent mortality over the test period. The reference sediment shall have less than twenty-five percent mortality.
 - (b) **Larval:** The seawater control sample shall have less than thirty percent combined abnormality and mortality (i.e., a seventy percent normal survivorship at time-final).
 - (c) **Benthic abundance:** The reference benthic macroinvertebrate assemblage shall be representative of areas of Puget Sound removed from significant sources of contaminants, and to the extent possible shall have the following characteristics:
 - (i) The taxonomic richness of benthic macroinvertebrates and the abundances of higher taxonomic groups shall reflect seasonality and natural physical-chemical conditions (e.g., grain size composition and salinity of sediments, water depth) in a reference area, and not be obviously depressed as a result of chemical toxicity;

Sediment Management Standards

WAC 173-204-315

- (ii) Normally abundant species that are known to be sensitive to chemical contaminants shall be present;
 - (iii) Normally rare species that are known to become abundant only under chemically disturbed conditions shall be rare or absent; and
 - (iv) The abundances of normally rare species that control community structure through physical modification of the sediment shall be similar to those observed at the test sediment site.
- (d) **Juvenile polychaete:** The control sediment shall have less than ten percent mortality and mean individual growth of ≥ 0.72 mg/ind/day per dry weight basis. The reference sediment shall have a mean individual growth rate which is at least eighty percent of the mean individual growth rate found in the control sediment. Control sediments exhibiting growth below 0.72 mg/ind/day may be approved by the department on a case-by-case basis.
- (e) **Microtox:** Reserved: The department shall determine performance standards on a case-by-case basis as necessary to meet the intent of this chapter.

[Statutory Authority: RCW 90.48.220, 96-02-058, § 173-204-315, filed 12/29/95, effective 1/29/96. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-315, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards**WAC 173-204-320****WAC 173-204-320 Marine sediment quality standards.****(1) Goal and applicability.**

- (a) The sediment quality standards of this section shall correspond to a sediment quality that will result in no adverse effects, including no acute or chronic adverse effects on biological resources and no significant health risk to humans.
- (b) The marine sediment quality standards of this section shall apply to marine sediments located within Puget Sound as defined in WAC 173-204-200(20).
- (c) Non-Puget Sound marine sediment quality standards. Reserved: The department shall determine on a case-by-case basis the criteria, methods, and procedures necessary to meet the intent of this chapter.

(2) Chemical concentration criteria. The chemical concentrations in Table I establish the marine sediment quality standards chemical criteria for designation of sediments.

- (a) Where laboratory analysis indicates a chemical is not detected in a sediment sample, the detection limit shall be reported and shall be at or below the Marine Sediment Quality Standards chemical criteria value set in this table.
- (b) Where chemical criteria in this table represent the sum of individual compounds or isomers, the following methods shall be applied:
 - (i) Where chemical analyses identify an undetected value for every individual compound/isomer then the single highest detection limit shall represent the sum of the respective compounds/isomers; and
 - (ii) Where chemical analyses detect one or more individual compound/isomers, only the detected concentrations will be added to represent the group sum.
- (c) The listed chemical parameter criteria represent concentrations in parts per million, "normalized," or expressed, on a total organic carbon basis. To normalize to total organic carbon, the dry weight concentration for each parameter is divided by the decimal fraction representing the percent total organic carbon content of the sediment.
- (d) The LPAH criterion represents the sum of the following "low molecular weight polynuclear aromatic hydrocarbon" compounds: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, and Anthracene. The LPAH criterion is not the sum of the criteria values for the individual LPAH compounds as listed.
- (e) The HPAH criterion represents the sum of the following "high molecular weight polynuclear aromatic hydrocarbon" compounds: Fluoranthene, Pyrene, Benz(a)anthracene, Chrysene, Total Benzo(a)fluoranthenes, Benzo(a)pyrene, Indeno(1,2,3-c,d)pyrene, Dibenzo(a,h)anthracene, and Benzo(g,h,i)perylene. The HPAH criterion is not the sum of the criteria values for the individual HPAH compounds as listed.
- (f) The Total Benzo(a)fluoranthenes criterion represents the sum of the concentrations of the "B," "J," and "K" isomers.

Sediment Management Standards

WAC 173-204-320

Table I
Marine Sediment Quality Standards--Chemical Criteria

Chemical Parameter	mg/kg Dry Weight (Parts per Million (ppm) Dry)
Arsenic	57
Cadmium	5.1
Chromium	260
Copper	390
Lead	450
Mercury	0.41
Silver	6.1
Zinc	410

Chemical Parameter	mg/kg Organic Carbon (ppm Carbon)
LPAH	370
Naphthalene	99
Acenaphthylene	66
Acenaphthene	16
Fluorene	23
Phenanthrene	100
Anthracene	220
2-Methylnaphthalene	38
HPAH	960
Fluoranthene	160
Pyrene	1000
Benz(a)anthracene	110
Chrysene	110
Total Benzo(a)fluoranthenes	230
Benzo(a)pyrene	99
Indeno(1,2,3-c,d)pyrene	34
Dibenzo(a,h)anthracene	12
Benzo(g,h,i)perylene	31
1,2-Dichlorobenzene	2.3
1,4-Dichlorobenzene	3.1
1,2,4-Trichlorobenzene	0.81
Hexachlorobenzene	0.38
Dimethyl phthalate	53
Diethyl phthalate	61
Di-n-butyl phthalate	220
Butyl benzyl phthalate	4.9
Bis (2-ethylhexyl) phthalate	47
Di-n-octyl phthalate	58
Dibenzofuran	15
Hexachlorobutadiene	3.9
N-Nitrosodiphenylamine	11
Total PCB'S	12

Chemical Parameter	ug/kg Dry Weight (Parts Per Billion (ppb) Dry)
Phenol	420
2-Methylphenol	63
4-Methylphenol	670
2,4-Dimethyl phenol	29
Pentachlorophenol	360
Benzyl Alcohol	57
Benzoic Acid	650

Adoption Date: February 22, 2013

Page 28

Sediment Management Standards

WAC 173-204-320

- (3) **Biological effects criteria.** For designation of sediments pursuant to WAC 173-204-310(2), sediments are determined to have adverse effects on biological resources when any one of the confirmatory marine sediment biological tests of WAC 173-204-315(1) demonstrate the following results:
- (a) **Amphipod:** The test sediment has a higher (statistically significant, t test, $p \leq 0.05$) mean mortality than the reference sediment and the test sediment mean mortality exceeds twenty-five percent, on an absolute basis.
 - (b) **Larval:** The test sediment has a mean survivorship of normal larvae that is less (statistically significant, t test, $p \leq 0.05$) than the mean normal survivorship in the reference sediment and the test sediment mean normal survivorship is less than eighty-five percent of the mean normal survivorship in the reference sediment (i.e., the test sediment has a mean combined abnormality and mortality that is greater than fifteen percent relative to time-final in the reference sediment).
 - (c) **Benthic abundance:** The test sediment has less than fifty percent of the reference sediment mean abundance of any one of the following major taxa: Class Crustacea, Phylum Mollusca or Class Polychaeta, and the test sediment abundance is statistically different (t test, $p \leq 0.05$) from the reference sediment abundance.
 - (d) **Juvenile polychaete:** The test sediment has a mean individual growth rate of less than seventy percent of the reference sediment mean individual growth rate and the test sediment mean individual growth rate is statistically different (t test, $p \leq 0.05$) from the reference sediment mean individual growth rate.
 - (e) **Microtox:** The mean light output of the highest concentration of the test sediment is less than eighty percent of the mean light output of the reference sediment, and the two means are statistically different from each other (t test, $p \leq 0.05$).
- (4) **Marine sediment human health criteria.** Reserved: The department may determine on a case-by-case basis the criteria, methods, and procedures necessary to meet the intent of this chapter.
- (5) **Marine sediment other toxic, radioactive, biological, or deleterious substances criteria.** Other toxic, radioactive, biological or deleterious substances in, or on, sediments shall be at or below levels which cause no adverse effects in marine biological resources, and below levels which correspond to a significant health risk to humans, as determined by the department. The department shall determine on a case-by-case basis the criteria, methods, and procedures necessary to meet the intent of this chapter pursuant to WAC 173-204-310(3).
- (6) **Nonanthropogenically affected sediment quality criteria.** Whenever the nonanthropogenically affected sediment quality is of a lower quality (i.e., higher chemical concentrations, higher levels of adverse biological response, or posing a greater health threat to humans) than the applicable sediment quality standards assigned for said sediments by this chapter, the existing sediment chemical and biological quality shall be identified on an area-wide basis as determined by the department, and used in place of the sediment quality standards of WAC 173-204-320.

[Statutory Authority: Chapters 70.105D and 90.48 RCW. 13-06-014 (Order 08-07), § 173-204-

Sediment Management Standards

WAC 173-204-320

320, filed 2/25/13, effective 9/1/13. Statutory Authority: RCW 90.48.220. 96-02-058, § 173-204-320, filed 12/29/95, effective 1/29/96. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-320, filed 3/27/91, effective 4/27/91.]

Adoption Date: February 22, 2013

Page 30

Sediment Management Standards

WAC 173-204-330

WAC 173-204-330 Low salinity sediment quality standards.

Reserved: The department shall determine on a case-by-case basis the criteria, methods, and procedures necessary to meet the intent of this chapter.

[Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-330, filed 3/27/91, effective 4/27/91.]

Adoption Date: February 22, 2013

Page 31

Sediment Management Standards

WAC 173-204-330

This page intentionally blank.

Adoption Date: February 22, 2013

Page 32

Sediment Management Standards

WAC 173-204-340

WAC 173-204-340 Freshwater sediment quality standards.

Reserved: The department shall determine on a case-by-case basis the criteria, methods, and procedures necessary to meet the intent of this chapter.

[Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-340, filed 3/27/91, effective 4/27/91.]

Adoption Date: February 22, 2013

Page 33

Sediment Management Standards

WAC 173-204-340

This page intentionally blank.

Adoption Date: February 22, 2013

Page 34

Sediment Management Standards**WAC 173-204-350****WAC 173-204-350 Sediment quality standards inventory.**

- (1) The department shall gather available data on sediments and produce an inventory of sediment sampling stations which pass or fail the applicable sediment quality standards of WAC 173-204-320 through 173-204-340. Sediment sampling stations which are evaluated for compliance with the sediment quality standards of WAC 173-204-320 through 173-204-340 and placed on the inventory shall be sampled and analyzed using the Puget Sound Protocols or other methods approved by the department, and shall use an appropriate quality assurance/quality control program, as determined by the department. The sediment quality standards inventory produced per this section shall be used by the department, and made available upon request to the public and other federal, state, and local agencies for the following uses:
 - (a) To identify and target necessary source control activities, such as discharger monitoring, to eliminate adverse effects on biological resources and significant health threats to humans from sediment contamination;
 - (b) To identify contaminated sediment cleanup sites per the procedures in WAC 173-204-500 through 173-204-590;
 - (c) To establish sediment quality ambient monitoring program status and trends analyses and reports;
 - (d) To identify the sediment quality of areas proposed for dredging, in-water construction, and other actions requiring federal, state, and/or local permits; and
 - (e) To complete other uses consistent with the intent of this chapter, as determined by the department.
- (2) **Sources of data.** Sediment biological and chemical data shall be gathered by the department for review to produce and update the sediment quality inventory on a biennial basis. Data sources include, but are not limited to:
 - (a) Sediment data collected by the department for the Puget Sound ambient monitoring program, compliance monitoring of permitted discharges, and special environmental investigations.
 - (b) Sediment data submitted to the U.S. Army Corps of Engineers in support of dredging permit applications.
 - (c) Sediment data collected to identify problem areas and needed source controls in Puget Sound as defined in WAC 173-204-200(20), other marine waters, and all low salinity and freshwater areas in Washington state.
 - (d) Sediment data used or collected in compliance with chapter 70.105D RCW, and the Model Toxics Control Act cleanup regulation, chapter 173-340 WAC.
 - (e) Sediment data used or collected in compliance with the federal Comprehensive Environmental Response, Compensation and Liability Act.
 - (f) Sediment data collected as a requirement of a National Pollutant Discharge Elimination System or state discharge permit.
 - (g) Sediment data derived from other studies including:

Sediment Management Standards

WAC 173-204-350

- (i) Federally sponsored monitoring studies.
 - (ii) Special monitoring studies conducted by local and municipal governments, or private industry.
 - (iii) Data derived through Washington state department of natural resources administration of use authorizations.
- (3) The inventory shall be updated and made available to the public on a biennial basis.

[Statutory Authority: Chapters 70.105D and 90.48 RCW. 13-06-014 (Order 08-07), § 173-204-350, filed 2/25/13, effective 9/1/13. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-350, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards

PART IV

SEDIMENT SOURCE CONTROL

WAC 173-204-400 through 173-204-420

Sediment Management Standards

WAC 173-204-400

**PART IV
SEDIMENT SOURCE CONTROL**

WAC 173-204-400 General considerations.

- (1) The standards of WAC 173-204-400 through 173-204-420 specify a process for managing sources of sediment contamination. These procedures include:
 - (a) Evaluating the potential for a waste discharge to create a sediment impact;
 - (b) Requiring application for a sediment impact zone authorization;
 - (c) Verifying whether a discharge has received all known, available and reasonable methods of prevention, control, and treatment prior to discharge, and/or application of best management practices;
 - (d) Analysis and verification of the potential sediment impact;
 - (e) Determining whether the sediment impact zone would meet maximum allowable contamination requirements;
 - (f) Evaluating the proposed sediment impact zone in consideration of locational criteria;
 - (g) Design and/or constrain the sediment impact zone to be as small, and with the least contamination, as practicable;
 - (h) Public review of the proposed sediment impact zone authorization;
 - (i) Issuance of the sediment impact zone authorization with provisions for maintenance and closure; and
 - (j) Reducing and eventually eliminating the sediment impact zone via renewals and modifications of a sediment impact zone authorization.
- (2) Permits and other authorizations of wastewater, storm water, and nonpoint source discharges to surface waters of the state of Washington under authority of chapter 90.48 RCW shall be conditioned so that the discharge receives all known, available and reasonable methods of prevention, control, and treatment, and best management practices prior to discharge, as required by chapters 90.48, 90.52, and 90.54 RCW. The department shall provide consistent guidance on the collection, analysis and evaluation of wastewater, receiving-water, and sediment samples to meet the intent of this section using consideration of pertinent sections of the *Department of Ecology Permit Writers' Manual*, as amended, and other guidance approved by the department.
- (3) As determined necessary, the department shall require any person who proposes a new discharge to evaluate the potential for the proposed discharge to cause a violation of the applicable sediment quality standards of WAC 173-204-320 through 173-204-340.
- (4) As determined necessary, the department shall require existing permitted discharges to evaluate the potential for the permitted discharge to cause a violation of the applicable sediment quality standards of WAC 173-204-320 through 173-204-340.
- (5) Within permits authorizing existing discharges to surface waters of the state of Washington, the department may specify appropriate locations and methodologies for the

Sediment Management Standards**WAC 173-204-400**

collection and analysis of representative samples of wastewater, receiving-water, and sediments to evaluate the potential for the discharge to cause a violation of the applicable sediment quality standards of WAC 173-204-320 through 173-204-340.

- (6) In establishing the need for, and the appropriate, individual permit monitoring conditions, the department shall consider multiple factors relating to the potential for a discharge to cause a violation of the applicable sediment quality standards of WAC 173-204-320 through 173-204-340 including but not limited to:
 - (a) Discharge particulate characteristics;
 - (b) Discharge contaminant concentrations, flow, and loading rate;
 - (c) Sediment chemical concentration and biological effects levels;
 - (d) Receiving water characteristics;
 - (e) The geomorphology of sediments;
 - (f) Cost mitigating factors such as the available resources of the discharger; and
 - (g) Other factors determined necessary by the department.
- (7) As determined necessary to ensure the wastewater discharge does not cause a violation of the applicable standards of WAC 173-204-320 through 173-204-340, except as authorized by the department under WAC 173-204-415, Sediment impact zones, the department shall stipulate permit terms and conditions which include wastewater discharge average and maximum mass loading per unit time, and wastewater discharge average and maximum chemical concentrations within new and existing facility permits authorizing wastewater discharges to surface waters of the state of Washington.
- (8) As determined necessary, the department shall modify wastewater discharge permits whenever it appears the discharge causes a violation, or creates a substantial potential to cause a violation of the applicable sediment quality standards of WAC 173-204-320 through 173-204-340, as authorized by RCW 90.48.520.
- (9) To meet the intent of this section, the sediment quality standards of WAC 173-204-320 through 173-204-340 and the sediment impact zone standards of WAC 173-204-415 through 173-204-420 are not considered to be federal discharge permit effluent limits subject to antibacksliding requirements of the federal Clean Water Act. Discharge permit sediment monitoring and sediment impact zone compliance requirements may be used to establish effluent limits sufficient to meet the standards of this chapter.
- (10) As determined necessary, the department shall use issuance of administrative actions under authority of chapters 90.48 or 70.105D RCW to implement this chapter.
- (11) Wastewater dilution zones. Water quality mixing zones authorized by the department pursuant to chapter 173-201A WAC, Water quality standards for surface waters of the state of Washington, do not satisfy the standards of WAC 173-204-415, Sediment impact zones.
- (12) For the sediment source control standards of WAC 173-204-400 through 173-204-420, any and all references to violation of, potential to violate, exceedance of, or potential to exceed the applicable standards of WAC 173-204-320 through 173-204-340 shall also apply to the antidegradation and designated use policies of WAC 173-204-120. Any exceedances or

Sediment Management Standards

WAC 173-204-400

potential exceedances of the antidegradation or designated use policies of WAC 173-204-120 shall meet the applicable requirements of WAC 173-204-400 through 173-204-420.

- (13) Under no circumstances shall the provisions of sediment source control standards WAC 173-204-400 through 173-204-420 be construed as providing for the relaxation of discharge permit requirements under other authorities including, but not limited to, chapter 90.48 RCW, the Water Pollution Control Act, chapter 90.54 RCW, the Water Resources Act of 1971, and the Federal Water Pollution Control Act of 1972 and amendments.

[Statutory Authority: RCW 90.48.220. 96-02-058, § 173-204-400, filed 12/29/95, effective 1/29/96. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-400, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards

WAC 173-204-400

This page intentionally blank.

Adoption Date: February 22, 2013

Page 42

Sediment Management Standards**WAC 173-204-410****WAC 173-204-410 Sediment quality goal and sediment impact zone applicability.****(1) Goal and policies.**

- (a) It is the established goal of the department to manage source control activities to reduce and ultimately eliminate adverse effects on biological resources and significant health threats to humans from sediment contamination.
 - (b) The stated policy of the department shall be to only authorize sediment impact zones so as to minimize the number, size, and adverse effects of all zones, with the intent to eliminate the existence of all such zones whenever practicable. The department shall consider the relationship between environmental effects, technical feasibility and cost in determining whether it is practicable to minimize and/or eliminate sediment impact zones.
 - (c) The department shall implement the standards of WAC 173-204-400 through 173-204-420 so as to prevent the creation of new contaminated sediment cleanup sites identified under WAC 173-204-520.
- (2) A sediment impact zone authorization issued by the department under the authority of chapter 90.48 RCW does not constitute authorization to trespass on lands not owned by the applicant. These standards do not address and in no way alter the legal rights, responsibilities, or liabilities of the permittee or landowner of the sediment impact zone for any applicable requirements of proprietary, real estate, tort, and/or other laws not directly expressed as a requirement of this chapter.
- (3) Except as identified in subsection (6)(d) of this section, any person may apply for a sediment impact zone under the following conditions:
- (a) The person's discharge is provided with all known, available and reasonable methods of prevention, control, and treatment, and meets best management practices as stipulated by the department; and
 - (b) The person's discharge activity exposes or resuspends sediments which exceed, or otherwise cause or potentially cause sediments to exceed the applicable sediment quality standards of WAC 173-204-320 through 173-204-340, or the antidegradation policy standards of WAC 173-204-120 (1)(a) and (c) within a period of ten years from the later date of either the department's formal approval of the application for a sediment impact zone authorization or the starting date of the discharge.
- (4) The department shall only authorize sediment impact zones for permitted wastewater and storm water discharges, and other discharges authorized by the department. The department shall authorize all sediment impact zones via discharge permits or other formal administrative actions.
- (5) The department shall not limit the application, establishment, maintenance, or closure of an authorized sediment impact zone via consideration of sediment contamination determined by the department to be the result of unknown, unpermitted or historic discharge sources.
- (6) As determined necessary by the department, any person with a permitted discharge shall be required to meet the standards of WAC 173-204-400 through 173-204-420, as follows:
- (a) Any person with a new or existing permitted wastewater discharge shall be required

Sediment Management Standards**WAC 173-204-410**

to meet the standards of WAC 173-204-400 through 173-204-420;

- (b) Any person with a new or existing permitted industrial storm water discharge, regulated as process wastewater in National Pollutant Discharge Elimination System or state discharge permits, shall be required to meet the standards of WAC 173-204-400 through 173-204-420;
- (c) Any person with a new or existing permitted storm water or nonpoint source discharge, which fully uses all known, available and reasonable methods of prevention, control, and treatment, and best management practices as stipulated by the department at the time of the person's application for a sediment impact zone, shall be required to meet the standards of WAC 173-204-400 through 173-204-420;
- (d) Any person with a storm water discharge, existing prior to the adoption of this chapter, and determined by the department to not be fully using best management practices stipulated by the department at the time of the person's application for a permit from the department, shall be eligible for a sediment impact zone as follows:
 - (i) The department shall issue sediment impact zone authorizations with requirements for application of best management practices stipulated by the department on an approved time schedule.
 - (ii) Sediment impact zones authorized by the department for permitted storm water discharges under the applicability provisions of subsection (6)(d) of this section shall be subject to cleanup action determinations made by the department pursuant to WAC 173-204-500 through 173-204-590 when the sediment impact zone maximum criteria of WAC 173-204-420 are exceeded within the authorized sediment impact zone.
 - (iii) The department shall identify and include best management practices required to meet the sediment impact zone design standards of WAC 173-204-415(4) as soon as practicable within sediment impact zone authorizations established for storm water discharges per WAC 173-204-410 (6)(d).
- (7) Dredged material and fill discharge activities subject to authorization under Section 401 of the federal Clean Water Act via chapter 90.48 RCW and chapter 173-225 WAC, establishment of implementation procedures of application for certification, are not subject to the standards of WAC 173-204-415 but are subject to the standards of WAC 173-204-400 through 173-204-410 and 173-204-420 as follows:
 - (a) Requirements for dredging activities and disposal sites shall be established by the department using best available dredged material management guidelines and applicable federal and state rules. These guidelines shall include the Puget Sound dredged disposal analysis (PSDDA) dredged material testing and disposal requirements cited in:
 - (i) *Management Plan Report - Unconfined Open-Water Disposal Of Dredged Material, Phase I, (Central Puget Sound), June 1988, or as amended;*
 - (ii) *Management Plan Report - Unconfined Open-Water Disposal Of Dredged Material, Phase II, (North And South Puget Sound), September 1989, or as amended; and*

Sediment Management Standards

WAC 173-204-410

- (iii) *Users Manual For Dredged Material Management In Puget Sound, November 1990, or as amended.*
- (b) In coordination with other applicable federal and state and local dredged material management programs, the department may issue administrative orders to establish approved disposal sites, to specify disposal site use conditions, and to specify disposal site monitoring requirements.
- (c) The department may authorize sediment impact zones for dredged material disposal via federal Clean Water Act Section 401 certification actions.
- (d) As determined necessary by the department, the department may authorize sediment impact zones for dredged material disposal via administrative orders issued under authority of chapter 90.48 RCW. The department shall authorize sediment impact zones for all Puget Sound dredged disposal analysis disposal sites via administrative orders issued under authority of chapter 90.48 RCW.
- (e) Administrative orders and certifications establishing sediment impact zones for dredged material disposal sites shall describe establishment, maintenance, and closure requirements for the authorized site, consistent with the requirements described in (a) of this subsection.
- (8) The source control standards of WAC 173-204-400 through 173-204-420 are applicable in cases where the sediment quality standards of WAC 173-204-320 through 173-204-340 are reserved.

[Statutory Authority: Chapters 70.105D and 90.48 RCW. 13-06-014 (Order 08-07), § 173-204-410, filed 2/25/13, effective 9/1/13. Statutory Authority: RCW 90.48.220. 96-02-058, § 173-204-410, filed 12/29/95, effective 1/29/96. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-410, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards

WAC 173-204-410

This page intentionally blank.

Adoption Date: February 22, 2013

Page 46

Sediment Management Standards**WAC 173-204-412****WAC 173-204-412 Marine finfish rearing facilities.**

- (1) **Purpose.** This section sets forth the applicability of this chapter to marine finfish rearing facilities only. This section also identifies marine finfish rearing facility siting, operation, closure and monitoring requirements to meet the intent of this chapter, as applicable.
- (2) **Applicability.** Marine finfish rearing facilities and their associated discharges are not subject to the authority and purpose standards of WAC 173-204-100 (3) and (7), and the marine sediment quality standards of WAC 173-204-320 and the sediment impact zone maximum criteria of WAC 173-204-420, within and including the distance of one hundred feet from the outer edge of the marine finfish rearing facility structure. Marine finfish rearing facilities are not subject to the sediment impact zone standards of WAC 173-204-415.
- (3) **Sediment monitoring.** Sediment quality compliance and monitoring requirements for marine finfish rearing facilities shall be addressed through National Pollutant Discharge Elimination System or other permits issued by the department for facility operation. Marine finfish rearing facilities shall meet the following sediment quality monitoring requirements:
 - (a) Any person with a new facility shall identify a baseline sediment quality prior to facility operation for benthic infaunal abundance, total organic carbon and grain size in the location of the proposed operation and downcurrent areas that may be potentially impacted by the facility discharge;
 - (b) Any person with an existing operating facility shall monitor sediment quality for total organic carbon levels and identify the location of any sediments in the area of the facility statistically different (t test, $p \leq 0.05$) from the total organic carbon levels identified as facility baseline levels or statistically different from the applicable total organic carbon levels as identified in Table 1:

TABLE 1**Puget Sound Reference Total Organic Carbon Values**

Silt Clay Particles (percent Dry Weight)	Total Organic Carbons (percent Dry Weight)
0 – 20	0.5
20 – 50	1.7
50 – 80	3.2
80 – 100	2.6

- (c) The locations and frequency of monitoring for total organic carbon, benthic infaunal abundance and other parameters shall be determined by the department and identified in the applicable National Pollutant Discharge Elimination System permit;
- (d) **Antibacterials.** Reserved: The department shall determine on a case-by-case basis

Sediment Management Standards**WAC 173-204-412**

the methods, procedure, locations, and frequency for monitoring antibacterials associated with the discharge from a marine finfish rearing facility;

- (e) **Closure.** All permitted marine finfish rearing facilities shall monitor sediments impacted during facility operation to document recovery of sediment quality to background levels. The department shall determine on a case-by-case basis the methods, procedure, locations, and frequency for monitoring sediments after facility closure.
- (4) **Sediment impact zones.** Marine finfish rearing facilities and their associated discharges that are permitted under a National Pollutant Discharge Elimination System permit are hereby provided a sediment impact zone by rule for any sediment quality impacts and biological effects within and including the distance of one hundred feet from the outer edge of the marine finfish rearing facility structure.
 - (a) The department may authorize an individual marine finfish rearing facility sediment impact zone for any sediments beyond a distance of one hundred feet from the facility perimeter via National Pollutant Discharge Elimination System permits or administrative actions. The authorized sediment impact zone shall meet the benthic infaunal abundance requirements of the sediment impact zone maximum criteria, WAC 173-204-420 (3)(c)(iii). Marine finfish rearing facilities that exceed the sediment quality conditions of subsection (3)(b) of this section beyond a distance of one hundred feet from the facility perimeter shall:
 - (i) Begin an enhanced sediment quality monitoring program to include benthic infaunal abundance consistent with the requirements of the National Pollutant Discharge Elimination System permit. The sediment quality monitoring program shall include a benthic infaunal abundance reference sediment sample as required in subsection (3)(a) of this section or a benthic infaunal abundance reference sediment sample in compliance with WAC 173-204-200(22); and
 - (ii) Be consistent with the sediment source control general considerations of WAC 173-204-400 and the sediment quality goal and sediment impact zone applicability requirements of WAC 173-204-410, apply for a sediment impact zone as determined necessary by the department.
 - (b) Administrative orders or permits establishing sediment impact zones for marine finfish rearing facilities shall describe establishment, maintenance, and closure requirements as determined necessary by the department.

[Statutory Authority: Chapters 70.105D and 90.48 RCW. 13-06-014 (Order 08-07), § 173-204-412, filed 2/25/13, effective 9/1/13. Statutory Authority: RCW 90.48.220, 96-02-058, § 173-204-412, filed 12/29/95, effective 1/29/96.]

Sediment Management Standards**WAC 173-204-415****WAC 173-204-415 Sediment impact zones.**

The purpose of this section is to set forth the standards for establishment, maintenance, and closure of sediment impact zones to meet the intent of sediment quality dilution zones authorized pursuant to RCW 90.48.520, except for sediment impact zones authorized under WAC 173-204-410(7). The department shall authorize all sediment impact zones via discharge permits or other formal administrative actions.

- (1) **General requirements.** Authorization, modification and renewal of a sediment impact zone by the department shall require compliance with the following general requirements:
- (a) Permits authorizing wastewater discharges to surface waters of the state of Washington under authority of chapter 90.48 RCW shall be conditioned so that the discharge receives:
 - (i) All known, available and reasonable methods of prevention, control, and treatment prior to discharge, as required by chapters 90.48, 90.52, and 90.54 RCW; and
 - (ii) Best management practices as stipulated by the department.
 - (b) The maximum area, and maximum chemical contaminant concentration and/or allowable maximum biological effect level within sediments assigned to a sediment impact zone shall be as authorized by the department, in accordance with the standards of this section.
 - (c) The department shall determine that the person's activity generating effluent discharges which require authorization of a sediment impact zone is in the public interest.
 - (d) The department shall determine that any person's activity generating effluent discharges which require authorization of a sediment impact zone has adequately addressed alternative waste reduction, recycling, and disposal options through application of all known, available and reasonable methods of prevention, control, and treatment to minimize as best practicable the volume and concentration of waste contaminants in the discharge.
 - (e) The area boundaries of the sediment impact zone established by the department shall include the minimum practicable surface area, not to exceed the surface area allowed under subsection (4) of this section.
 - (f) Adverse effects to biological resources within an authorized sediment impact zone shall be maintained at the minimum chemical contamination and biological effects levels practicable at all times. The department shall consider the relationship between environmental effects, technical feasibility and cost in determining the minimum practicable chemical contamination and biological effects levels. Adverse effects to biological resources within an authorized sediment impact zone shall not exceed a minor adverse effects level as a result of the discharge, as determined by the procedures of subsection (4) of this section.
 - (g) The operational terms and conditions for the sediment impact zone shall be maintained at all times.

Sediment Management Standards**WAC 173-204-415**

- (h) Final closure of the sediment impact zone shall be conducted in strict accordance with the department's sediment impact zone authorization.
 - (i) Documents authorizing a sediment impact zone shall require that the permitted discharge not result in a violation of the applicable sediment quality standards of WAC 173-204-320 through 173-204-340, outside the area limits of the established zone.
 - (j) All applications to the department for sediment impact zone authorizations shall be subject to public notice, comment and hearing procedures defined but not limited to the applicable discharge permit or other formal administrative action requirements of chapter 43.21C RCW, the State Environmental Policy Act, chapter 197-11 WAC, SEPA rules, chapter 90.48 RCW, chapter 163-216 WAC, the State waste discharge permit program, and chapter 173-220 WAC, National Pollutant Discharge Elimination System Permit Program prior to issuance of the authorization. In determining the need for, location, and/or design of any sediment impact zone authorization, the department shall give consideration to all comments received during public review of the proposed sediment impact zone application.
- (2) Application requirements.**
- (a) Whenever, in the opinion of the department, as a result of an ongoing or proposed effluent discharge, a person violates, shall violate, or creates a substantial potential to violate the sediment quality standards of WAC 173-204-320 through 173-204-340 as applicable within a period of ten years from the later date of either the department's evaluation of the ongoing discharge or the starting date of the proposed discharge, the department may require application for a sediment impact zone authorization under authority of chapter 90.48 RCW.
 - (b) Any person with a proposed or permitted effluent discharge shall apply to the department for authorization of a sediment impact zone when:
 - (i) The department requires the sediment impact zone application by written notification; or
 - (ii) The person independently identifies that the ongoing or proposed effluent discharge violates, shall violate, or creates a substantial potential to violate the applicable sediment quality standards of WAC 173-204-320 through 173-204-340 within a period of ten years from the later date of the person's evaluation of the ongoing discharge or the starting date of the proposed discharge, using the procedures of this section.
 - (c) As necessary, the department may require any person to submit a sediment impact zone application in multiple steps concurrent with its ongoing review and determination concerning the adequacy of the application. The application shall provide the sediment impact zone design information required in subsection (4) of this section and other such information the department determines necessary. The application shall also provide the legal location and landowner(s) of property proposed for use as, or potentially affected by, a sediment impact zone, and shall be accompanied by such other relevant information as the department may require. The department shall issue a written approval of the complete sediment impact zone

Sediment Management Standards**WAC 173-204-415**

application prior to or concurrent with authorizing a sediment impact zone.

- (d) Submittal of an application to the department for authorization of a sediment impact zone under the terms and conditions of this section shall establish the applicant's interim compliance with requirements of chapter 90.48 RCW and this chapter, as determined by the department. The department may authorize an interim compliance period within a valid discharge permit or administrative order to ensure ultimate compliance with chapter 90.48 RCW and this chapter. The interim compliance period shall not continue beyond the date of issuance of a sediment impact zone authorization within a valid discharge permit issued by the department.
- (e) Prior to authorization, the department shall make a reasonable effort to identify and notify all landowners, adjacent landowners, and lessees affected by the proposed sediment impact zone. The department shall issue a sediment impact zone notification letter to any person it believes to be a potentially affected landowner and other parties determined appropriate by the department. The notification letter shall be sent by certified mail, return receipt requested, or by personal service. The notification letter shall provide:
 - (i) The name of the person the department believes to be the affected landowner;
 - (ii) The names and addresses of other affected landowners to whom the department has sent a proposed sediment impact zone notification letter;
 - (iii) The name and address of the sediment impact zone applicant;
 - (iv) A general description of the location, size, and contamination level proposed for the sediment impact zone;
 - (v) The intention of the department to release all specific sediment impact zone application information to the public upon written request to the department;
 - (vi) The determination of the department concerning whether the proposed sediment impact zone application meets the standards of this section;
 - (vii) The intention of the department whether to authorize the proposed sediment impact zone; and
 - (viii) Notification that the affected landowners, adjacent landowners, and lessees may comment on the proposed sediment impact zone. Any comments on the proposed sediment impact zone authorization shall be submitted in writing to the department within thirty days from the date of receipt of the notification letter, unless the department provides an extension.
- (f) Prior to authorization, the department shall issue a sediment impact zone notification letter to affected port districts, the Washington state department of natural resources marine lands division, the U.S. Army Corps of Engineers, and other parties determined appropriate by the department. The notification letter shall be sent by certified mail, return receipt requested, or by personal service. The notification letter shall provide the information required under (e) of this subsection.
- (3) **Locational considerations.** The department shall require any person applying for a sediment impact zone to submit information concerning potential location considerations of

Sediment Management Standards**WAC 173-204-415**

the zone. The location of an authorized sediment impact zone shall avoid whenever possible and minimize adverse impacts to areas of special importance. Prior to authorization of a sediment impact zone, the department shall consider all pertinent information from the applicant, all affected parties, local, state and federal agencies, federally recognized Indian tribes, and the public concerning locational considerations, including but not limited to:

- (a) Spawning areas;
 - (b) Nursery areas;
 - (c) Waterfowl feeding areas;
 - (d) Shellfish harvest areas;
 - (e) Areas used by species of economic importance;
 - (f) Tribal areas of significance;
 - (g) Areas determined to be ecologically unique;
 - (h) Water supply intake areas;
 - (i) Areas used for primary contact public recreation;
 - (j) High quality waters that constitute an outstanding national resource; and
 - (k) Areas where sediment quality is substantially better than levels necessary for protection of biological resources and human health.
- (4) **Design requirements.** The location, areal limitations, and degree of effects allowed within an authorized sediment impact zone shall be determined by application of the department's sediment impact zone computer models "CORMIX," "PLUMES," and/or "WASP," or an alternate sediment impact zone model(s) approved by the department under WAC 173-204-130(4), as limited by the standards of this section and the department's best professional judgment. The models shall be used by the department or by the discharger as required by the department, to estimate the impact of any person's wastewater or storm water discharge on the receiving water and sediment quality for a period of ten years from the later date of either the department's formal approval of the application for a sediment impact zone authorization or the starting date of the discharge.
- (a) **Data requirements.** The discharger shall submit the following information to determine requirements for establishment and authorization of a sediment impact zone, as required by the department:
 - (i) Data reports and analyses results for all samples of wastewater or storm water, receiving water, and sediments collected by the discharger or other parties relating to evaluation of the potential effects of the permitted discharge, as required by WAC 173-204-400.
 - (ii) Data reports and analyses results determined necessary to:
 - (A) Apply discharge modeling to the permitted discharge; and
 - (B) To identify and evaluate potential alternative chemical and biological effects of the discharge on the receiving water and sediments; and

Sediment Management Standards**WAC 173-204-415**

- (C) To identify and evaluate potential alternatives to define the areal size and location of a sediment impact zone needed by the discharge.
- (iii) Data reports and analyses results from the discharger's application of the "CORMIX," "PLUMES," and/or "WASP" or an alternate sediment impact zone model(s) approved by the department under WAC 173-204-130(4), to the permitted discharge to identify and evaluate:
 - (A) Potential alternative chemical and biological effects of the discharge on the receiving water and sediments; and
 - (B) Potential alternatives for the areal distribution and location of a potential sediment impact zone required by the discharge.
- (iv) Preferred alternative for closure of the potential sediment impact zone by active removal and/or natural recovery, and identified costs of the preferred closure method.
- (b) **Overlapping sediment impact zones.** Overlapping sediment impact zones, as predicted by the "CORMIX," "PLUMES," and/or "WASP" models or an alternate sediment impact zone model(s) approved by the department under WAC 173-204-130(4), and the department's best professional judgment, shall be authorized only as follows:
 - (i) The applicable sediment impact zone maximum criteria of WAC 173-204-420 shall not be exceeded as a result of the multiple discharge sediment impact zones overlap; and
 - (ii) If the department determines that the applicable chemical contaminant concentration and biological effects restrictions of WAC 173-204-420 would be exceeded as a result of the overlap of multiple discharge sediment impact zones, the department may authorize the sediment impact zones after:
 - (A) Application of a waste load allocation process to the individual permitted discharges to identify individual permit effluent limitations necessary to meet:
 - I. The applicable chemical contaminant concentration and biological effects restrictions for sediment impact zones required by this section; and/or
 - II. Storm water best management practices required by the department; and
 - (B) Establishment of individual permit compliance schedules for the multiple permitted discharges to ensure compliance with:
 - I. The permit effluent limitations established by the department using the waste load allocation process and best professional judgment; and
 - II. The standards of WAC 173-204-400 through 173-204-420.
- (5) **Maintenance requirements.**
 - (a) The department shall review sediment impact zone monitoring conducted by the

Sediment Management Standards**WAC 173-204-415**

discharger to evaluate compliance with the department's sediment impact zone authorization and the standards of WAC 173-204-400 through 173-204-420. The department may require additional sediment impact zone monitoring when the department determines that any sediment sampling station within an authorized sediment impact zone exceeds the sediment impact zone maximum criteria of WAC 173-204-420 or violates the sediment impact zone authorization as a result of the discharge.

- (b) Whenever the department can clearly demonstrate that, as a result of an effluent discharge, a discharger violates, shall violate, or creates a substantial potential to violate the department's sediment impact zone authorization, or the sediment impact zone maximum criteria of WAC 173-204-420, the department shall:
 - (i) Provide written notification and supporting documentation of the department's clear demonstration determination to the affected discharger;
 - (ii) Establish a reasonable time frame for the affected discharger to either submit a written statement and supporting documentation rebutting the department's clear demonstration determination, or accept the department's determination. The discharger may use the clear demonstration methods identified in (c) of this subsection for rebuttal of the department's clear demonstration; and
 - (iii) Provide written notification of the department's determination concerning approval or denial of the submitted clear demonstration rebuttal to the discharger.
- (c) For the purpose of this section, a clear demonstration shall consist of:
 - (i) Use of the sediment impact zone model(s) "CORMIX," "PLUMES," and/or "WASP" or other model(s) to demonstrate a discharge(s) is the source of the violation or potential violation; and
 - (ii) Use of one or more of the following methods to demonstrate a violation of the sediment impact zone authorization or the sediment impact zone maximum criteria of WAC 173-204-420:
 - (A) **Direct sediment sampling.** A violation of the sediment impact zone authorization and/or the sediment impact zone maximum criteria of WAC 173-204-420 is demonstrated when:
 - I. The average chemical concentration for three stations within the sediment impact zone exceeds the sediment impact zone maximum criteria of WAC 173-204-420 due to the discharge source. This concentration average shall not include stations for which complete biological testing information shows that the biological effects requirements of WAC 173-204-420, or the authorized sediment impact zone if applicable, are met; or
 - II. The biological effects at each of any three stations within the sediment impact zone exceed the sediment impact zone maximum biological effects criteria of WAC 173-204-420 or the authorized sediment impact zone as applicable, due to the discharge source; or

Sediment Management Standards**WAC 173-204-415**

- (B) Monitoring data which demonstrates a chemical contaminant concentration gradient toward the discharge source exists in sediments which violates the sediment impact zone authorization or the standards of WAC 173-204-420; or
 - (C) A trend analysis of the effluent chemical discharge quality and (inplace) sediment monitoring data which statistically demonstrates an ongoing violation or substantial potential to violate the sediment impact zone authorization or the standards of WAC 173-204-420; or
 - (D) Field depositional (e.g., sediment traps) and/or effluent particulate (e.g., centrifuge analysis) data which demonstrate an ongoing violation or substantial potential to violate the sediment impact zone authorization or the standards of WAC 173-204-420; or
 - (E) Mathematical or computer modeling which demonstrates an ongoing violation or substantial potential to violate the sediment impact zone authorization or the standards of WAC 173-204-420.
- (d) The department's response to a clear demonstration of a violation or potential violation shall be to require maintenance activities in the following order:
- (i) Require reanalysis of whether the discharger's effluent treatment complies with all known, available and reasonable methods of prevention, control, and treatment and best management practices based on the data used to establish the clear demonstration;
 - (ii) Alter the authorized sediment impact zone size and/or degree of effects consistent with the standards of this section and the results of direct sediment sampling;
 - (iii) Reduce impacts of the existing or potential violation by requiring additional discharge controls or additional sediment impact zone maintenance activities which can include, but are not limited to:
 - (A) Dredging and removal of sediments, solely for sediment impact zone maintenance needs or coordinated with maintenance dredging of commercially important areas, e.g., navigational lanes or ship berthing areas;
 - (B) Dredging, treatment, and replacement of sediments within the sediment impact zone; and/or
 - (C) Capping of sediments within the sediment impact zone;
 - (iv) Limit the quantity and/or quality of the existing permitted discharge; and/or
 - (v) Withdraw the department's sediment impact zone authorization and require final closure of the zone.
- (e) All sediment impact zone maintenance actions conducted under this chapter shall provide for landowner review of the maintenance action plans prior to implementation of the action. In cases where the discharger is not able to secure access to lands subject to the sediment impact zone maintenance actions of this

Sediment Management Standards**WAC 173-204-415**

subsection, the department may facilitate negotiations or other proceedings to secure access to the lands. Requests for department facilitation of land access shall be submitted to the department in writing by the responsible discharger.

(6) Closure planning and requirements.

- (a) The discharger shall select and identify a preferred method for closure of a sediment impact zone in the application required by WAC 173-204-415(2). Closure methods can include either active cleanup and/or natural recovery and monitoring. The department shall incorporate the discharger's identified closure method in the sediment impact zone authorization.
- (b) The department may require closure of authorized sediment impact zones when the department determines that:
 - (i) The discharger has violated the sediment impact zone maintenance standards of subsection (5) of this section; or
 - (ii) The department determines that:
 - (A) The wastewater or storm water discharge quality will not violate the applicable sediment quality standards of WAC 173-204-320 through 173-204-340; or
 - (B) A sediment impact zone is no longer needed or eligible under the standards of WAC 173-204-410 through 173-204-415.

(7) Modification of sediment impact zones. The department may modify sediment impact zone authorization requirements where the nature of a person's activity which generates, transports, disposes, prevents, controls, or treats effluent discharges has substantially changed and been demonstrated to the department's satisfaction. The modification may occur after consideration of the following:

- (a) **Reduction of effects.** Assessment of the discharge activities and treatment methods shall be conducted by the discharger to demonstrate to the satisfaction of the department that:
 - (i) Elimination of the sediment impact zone is not practicable; and
 - (ii) Further reduction in any existing or proposed sediment impact zone area size and/or level of contamination or effects is not practicable in consideration of discharge requirements for all known, available and reasonable methods of prevention, control, and treatment, best management practices, and applicable waste reduction and recycling provisions.
- (b) **Alterations.** There are substantial alterations or additions to the person's activity generating effluent discharges which require authorization of a sediment impact zone which occur after permit issuance and justify application of permit conditions different from, or absent in, the existing permit.
- (c) **New information.** Sediment impact zones may be modified when new information is received by the department that was not available at the time of permit issuance that would have justified the application of different sediment impact zone authorization conditions.

Sediment Management Standards**WAC 173-204-415**

- (d) **New regulations.** The standards or regulations on which the permit was based have changed by amended standards, criteria, or by judicial decision after the permit was issued.
 - (e) **Changes in technology.** Advances in waste control technology that qualify as "all known, available and reasonable methods of prevention, control, and treatment" and "best management practices" shall be adopted as permit requirements, as appropriate, in all permits reissued by the department.
- (8) **Renewal of previously authorized sediment impact zones.** Renewal of sediment impact zones previously authorized under the standards of WAC 173-204-410 and this section shall be allowed under the following conditions:
- (a) The department determines the discharge activities and treatment methods meet all known, available and reasonable methods of prevention, control, and treatment and best management practices as stipulated by the department; and
 - (b) The discharger demonstrates to the department's satisfaction that the discharge activities comply with the standards of WAC 173-204-400 through 173-204-420 and with the existing sediment impact zone authorization; and
 - (c) **Reduction of effects.** The discharger conducts an assessment of the permitted discharge activities and treatment methods and demonstrates to the department's satisfaction that:
 - (i) Elimination of the sediment impact zone is not practicable; and
 - (ii) further reduction in any existing or proposed sediment impact zone area size and/or level of contamination is not practicable in consideration of discharge requirements for all known, available and reasonable methods of prevention, control, and treatment, best management practices, and applicable waste reduction and recycling provisions.

[Statutory Authority: Chapters 70.105D and 90.48 RCW. 13-06-014 (Order 08-07), § 173-204-415, filed 2/25/13, effective 9/1/13. Statutory Authority: RCW 90.48.220. 96-02-058, § 173-204-415, filed 12/29/95, effective 1/29/96. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-415, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards

WAC 173-204-415

This page intentionally blank.

Adoption Date: February 22, 2013

Page 58

Sediment Management Standards**WAC 173-204-420****WAC 173-204-420 Sediment impact zone maximum criteria.**

This section establishes minor adverse effects as the maximum chemical contaminant concentration, maximum health risk to humans, maximum biological effects level, maximum other toxic, radioactive, biological, or deleterious substance level, and maximum nonanthropogenically affected sediment quality level allowed within authorized sediment impact zones due to an existing or proposed discharge. If the department determines that the standards of this section are or will be exceeded as a result of an existing or proposed discharge(s), the department shall authorize a sediment impact zone or modify a sediment impact zone authorization consistent with the standards of WAC 173-204-400 through 173-204-420 such that individual permit effluent limitations, requirements, and compliance time periods are sufficient to meet the standards of this section as applicable.

(1) Applicability.

- (a) The marine sediment impact zone maximum chemical criteria, and the marine sediment biological effects criteria, and the marine sediment human health criteria, and the marine sediment other toxic, radioactive, biological or deleterious substance criteria and the marine sediment nonanthropogenically affected sediment criteria of this section shall apply to marine sediments within Puget Sound.
- (b) **Non-Puget Sound marine sediment impact zone maximum criteria.** Reserved: The department shall determine on a case-by-case basis the criteria, methods, and procedures necessary to meet the intent of this chapter.
- (c) **Low salinity sediment impact zone maximum criteria.** Reserved: The department shall determine on a case-by-case basis the criteria, methods, and procedures necessary to meet the intent of this chapter.
- (d) **Freshwater sediment impact zone maximum criteria.** Reserved: The department shall determine on a case-by-case basis the criteria, methods, and procedures necessary to meet the intent of this chapter.

(2) Puget Sound marine sediment impact zone maximum chemical criteria. The maximum chemical concentration levels that may be allowed within an authorized sediment impact zone due to a permitted or otherwise authorized discharge shall be at or below the chemical levels stipulated in Table II, Sediment Impact Zone Maximum Chemical Criteria, except as provided for by the marine sediment biological effects restrictions of subsection (3) of this section, and any compliance time periods established under WAC 173-204-410 (6)(d) and 173-204-415.

- (a) Where laboratory analysis indicates a chemical is not detected in a sediment sample, the detection limit shall be reported and shall be at or below the Marine Sediment Quality Standards chemical criteria value set in WAC 173-204-320(2).
- (b) Where chemical criteria in this table represent the sum of individual compounds or isomers, the following methods shall be applied:
 - (i) Where chemical analyses identify an undetected value for every individual compound/isomer then the single highest detection limit shall represent the sum of the respective compounds/isomers; and
 - (ii) Where chemical analyses detect one or more individual compound/isomers,

Sediment Management Standards**WAC 173-204-420**

only the detected concentrations will be added to represent the group sum.

- (c) The listed chemical parameter criteria represent concentrations in parts per million, "normalized," or expressed, on a total organic carbon basis. To normalize to total organic carbon, the dry weight concentration for each parameter is divided by the decimal fraction representing the percent total organic carbon content of the sediment.
- (d) The LPAH criterion represents the sum of the following "low molecular weight polynuclear aromatic hydrocarbon" compounds: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, and Anthracene. The LPAH criterion is not the sum of the criteria values for the individual LPAH compounds as listed.
- (e) The HPAH criterion represents the sum of the following "high molecular weight polynuclear aromatic hydrocarbon" compounds: Fluoranthene, Pyrene, Benz(a)anthracene, Chrysene, Total Benzo(a)fluoranthenes, Benzo(a)pyrene, Indeno(1,2,3,-c,d)pyrene, Dibenzo(a,h)anthracene, and Benzo(g,h,i)perylene. The HPAH criterion is not the sum of the criteria values for the individual HPAH compounds as listed.
- (f) The Total Benzo(a)fluoranthenes criterion represents the sum of the concentrations of the "B," "J," and "K" isomers.

Sediment Management Standards

WAC 173-204-420

Table II
Puget Sound Marine Sediment Impact Zones
Maximum Chemical Criteria

Chemical Parameter	mg/kg Dry Weight (Parts Per Million (ppm) Dry)
Arsenic	93
Cadmium	6.7
Chromium	270
Copper	390
Lead	530
Mercury	0.59
Silver	6.1
Zinc	960

Chemical Parameter	mg/kg Organic Carbon (ppm Carbon)
LPAH	780
Naphthalene	170
Acenaphthylene	66
Acenaphthene	57
Fluorene	79
Phenanthrene	480
Anthracene	1200
2-Methylnaphthalene	64
HPAH	5300
Fluoranthene	1200
Pyrene	1400
Benz(a)anthracene	270
Chrysene	460
Total Benzo(a)fluoranthenes	450
Benzo(a)pyrene	210
Indeno(1,2,3-c,d)pyrene	88
Dibenzo(a,h)anthracene	33
Benzo(g,h,i)perylene	78
1,2-Dichlorobenzene	2.3
1,4-Dichlorobenzene	9
1,2,4-Trichlorobenzene	1.8
Hexachlorobenzene	2.3
Dimethyl phthalate	53
Diethyl phthalate	110
Di-n-butyl phthalate	1700
Butyl benzyl phthalate	64
Bis (2-ethylhexyl) phthalate	78
Di-n-octyl phthalate	4500
Dibenzofuran	58
Hexachlorobutadiene	6.2
N-Nitrosodiphenylamine	11
Total PCB'S	65

Chemical Parameter	ug/kg Dry Weight (Parts Per Billion (ppb) Dry)
Phenol	1200
2-Methylphenol	63
4-Methylphenol	670
2,4-Dimethyl Phenol	29
Pentachlorophenol	690
Benzyl Alcohol	73
Benzoic Acid	650

Adoption Date: February 22, 2013

Page 61

Sediment Management Standards**WAC 173-204-420**

- (3) Puget Sound marine sediment impact zone maximum biological effects criteria. The maximum biological effects level that may be allowed within an authorized sediment impact zone shall be at or below a minor adverse biological effects level. The acute and chronic effects biological tests of WAC 173-204-315(1) may be used to determine compliance with the minor adverse biological effects restriction within an authorized sediment impact zone as follows:
- (a) When using biological testing to determine compliance with the maximum biological effects criteria within a sediment impact zone, a person shall select and conduct any two acute effects tests and any one chronic effects test.
 - (b) The biological tests shall not be considered valid unless test results for the appropriate control and reference sediment samples meet the performance standards described in WAC 173-204-315(2).
 - (c) The sediment impact zone maximum biological effects level is established as that level below which any two of the biological tests in any combination exceed the criteria of WAC 173-204-320(3), or one of the following biological test determinations is made:
 - (i) **Amphipod:** The test sediment has a higher (statistically significant, t test, $p \leq 0.05$) mean mortality than the reference sediment and the test sediment mean mortality is greater than a value represented by the reference sediment mean mortality plus thirty percent; or
 - (ii) **Larval:** The test sediment has a mean survivorship of normal larvae that is less (statistically significant, t test, $p \leq 0.05$) than the mean normal survivorship in the reference sediment sample and the test sediment mean normal survivorship is less than seventy percent of the mean normal survivorship in the reference sediment (i.e., the test sediment has a mean combined abnormality and mortality that is greater than thirty percent relative to time-final in the reference sediment); or
 - (iii) **Benthic abundance:** The test sediment has less than fifty percent of the reference sediment mean abundance of any two of the following major taxa: Class Crustacea, Phylum Mollusca or Class Polychaeta and the test sediment abundances are statistically different (t test, $p \leq 0.05$) from the reference sediment abundances; or
 - (iv) **Juvenile polychaete:** The test sediment has a mean individual growth rate of less than fifty percent of the reference sediment mean individual growth rate and the test sediment mean individual growth rate is statistically different (t test, $p \leq 0.05$) from the reference sediment mean individual growth rate.
 - (4) **Puget Sound marine sediment impact zone maximum human health criteria.** Reserved: The department may determine on a case-by-case basis the criteria, methods, and procedures necessary to meet the intent of this chapter.
 - (5) **Puget Sound marine sediment impact zone maximum other toxic, radioactive, biological, or deleterious substances criteria.** Other toxic, radioactive, biological or deleterious substances in, or on, sediments shall be below levels which cause minor adverse

Sediment Management Standards

WAC 173-204-420

effects in marine biological resources, or which correspond to a significant health risk to humans, as determined by the department. The department shall determine on a case-by-case basis the criteria, methods, and procedures necessary to meet the intent of this chapter.

- (6) **Puget Sound marine sediment impact zone maximum nonanthropogenically affected sediment criteria.** Whenever the nonanthropogenically affected sediment quality is of a lower quality (i.e., higher chemical concentrations, higher levels of adverse biological response, or posing a higher threat to human health) than the applicable sediment impact zone maximum criteria established under this section, the existing sediment chemical and biological quality shall be identified on an area-wide basis as determined by the department, and used in place of the standards of WAC 173-204-420.

[Statutory Authority: RCW 90.48.220, 96-02-058, § 173-204-420, filed 12/29/95, effective 1/29/96. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-420, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards

WAC 173-204-420

This page intentionally blank

Adoption Date: February 22, 2013

Page 64

Sediment Management Standards

PART V

SEDIMENT CLEANUP STANDARDS

WAC 173-204-500 through 173-204-590

Sediment Management Standards

WAC 173-204-500

PART V
SEDIMENT CLEANUP STANDARDS

WAC 173-204-500 Sediment cleanup decision process and policies.**(1) Applicability.**

- (a) This part is promulgated under the authority of chapter 70.105D RCW, the Model Toxics Control Act. This part establishes requirements for identifying, investigating, and cleaning up a release or threatened release of a contaminant to sediment that may pose a threat to human health or the environment. This part shall be used for the purposes of chapter 70.105D RCW.
- (b) This part shall not be used in the implementation of the federal Clean Water Act (33 U.S.C. Sec. 1251). The sediment cleanup standards and the other cleanup criteria in this part are not sediment quality standards, which are established under Part III of this chapter, or sediment impact zone maximum criteria, which are established under Part IV of this chapter.
- (c) This section describes the decision process and associated policies and principles governing the identification, investigation, and cleanup of contaminated sediment at sites under chapter 70.105D RCW. If there are any inconsistencies between this section and a specifically referenced section, the specifically referenced section shall govern.

(2) Cleanup decision process. In general, the process for cleanup of contaminated sediments includes the following steps:

- (a) Identifying sediment station clusters of potential concern (WAC 173-204-510);
- (b) Identifying cleanup sites for further evaluation (WAC 173-204-520);
- (c) Evaluating sites identified in (b) of this subsection (WAC 173-204-530);
- (d) Determining the appropriate site cleanup authority (WAC 173-204-540);
- (e) Conducting a remedial investigation and feasibility study (WAC 173-204-550);
- (f) Establishing the applicable sediment cleanup standards (WAC 173-204-560 through 173-204-564);
- (g) Selecting a cleanup action (WAC 173-204-570);
- (h) Documenting the cleanup action decision and soliciting public review of that decision (WAC 173-204-575); and
- (i) Where necessary, authorizing a sediment recovery zone (WAC 173-204-590).

(3) Coordination with other laws. The cleanup process and procedures under this part and under other laws may be combined.**(4) Cleanup process expectations.** The department has the following expectations regarding the cleanup process for contaminated sediment sites. The department recognizes there may be sites where cleanup actions conforming to these expectations are inappropriate.

Sediment Management Standards**WAC 173-204-500**

- (a) **Scale of cleanups.** Sediment contamination can be widespread with multiple contaminants from multiple sources that have been intermingled and dispersed by natural processes and human activity. It is the department's intent to address this widespread contamination using multiple approaches that lead to cleanup as effectively and efficiently as possible. This may include:
 - (i) The establishment of sediment cleanup unit(s) within a site, and the expedited cleanup of those units consistent with the cleanup strategy and broader scale toxics reduction and source control strategies;
 - (ii) Coordinating cleanup of multiple sites and sediment cleanup units on a bay-wide, area-wide, or watershed-wide scale; and
 - (iii) Use of source control measures to minimize future contamination.
- (b) **Recontamination.** Recontamination of sediment at remediated sites or sediment cleanup units may occur from ongoing discharges or other releases. It is the department's expectation that further cleanup of recontamination will not be required by the person(s) conducting the initial cleanup when the person(s) can demonstrate, upon department approval, that the recontamination is caused by ongoing discharges or other releases not under the authority or responsibility of the person(s) conducting the initial cleanup.
- (c) **Restoration time frame and cleanup actions.** The department expects that the sediment component of sites and sediment cleanup units will achieve sediment cleanup standards as soon as practicable to minimize impacts to aquatic organisms, habitat, and human health. Recognizing there may be sites where the following expectations are inappropriate, the department expects the likely results of the remedy selection process in WAC 173-204-570 will be as follows:
 - (i) For sites with a limited areal extent of contamination, the department expects the focus will be on the use of active cleanup actions to achieve sediment cleanup standards quickly and minimize the need for long-term maintenance and monitoring; or
 - (ii) For sites with more wide-spread contamination, sediment cleanup standards may not be practicable to achieve using only active cleanup actions. For these types of sites, the department expects the focus will be on the use of active cleanup actions to remove, cap, or treat areas with higher contamination followed by the use of enhanced or monitored natural recovery to achieve sediment cleanup standards as soon as practicable.
- (d) **Compliance monitoring.** The department expects that post-cleanup monitoring will be conducted at sites and sediment cleanup units to verify compliance with approved sediment cleanup standards.
 - (i) Monitoring will typically include analysis of sediment chemistry at a minimum, but may also include bioassays, tissue chemistry, benthic infauna, pore water, and surface water testing.
 - (ii) The department expects that, where site-specific circumstances warrant, more discharge monitoring may be required than would normally occur under a

Sediment Management Standards**WAC 173-204-500**

discharge permit.

- (e) **Scope of information.** The scope of information needed to adequately characterize different site or sediment cleanup units will vary depending on site conditions and complexity. It is the department's expectation that sufficient information will be gathered in as few sampling events as feasible to enable appropriate decisions and cleanups to proceed expeditiously.
 - (f) **Timely decisions.** The department shall endeavor to make sediment cleanup decisions in an expeditious manner, as soon as all information required by the department is available, consistent with the availability of department resources and the priority of the cleanup site.
- (5) **Relationship between sediment cleanup standards and cleanup actions.** It is the policy of the department to establish sediment cleanup standards and select cleanup actions that support the goal of reducing and ultimately eliminating adverse effects on biological resources and significant health threats to humans from sediment contamination.
- (a) **Sediment cleanup standards.** WAC 173-204-560 establishes requirements for sediment cleanup standards. Sediment cleanup standards consist of sediment cleanup levels for individual contaminants and the locations within the site or sediment cleanup unit where the sediment cleanup levels must be met (points of compliance). Sediment cleanup standards may also include other regulatory requirements that apply to a cleanup action for contaminated sediment because of the type of action and/or location of the site (applicable laws).
 - (i) **Sediment cleanup level.** A sediment cleanup level is the concentration or level of biological effects for a contaminant in sediment that is determined by the department to be protective of human health and the environment. The sediment cleanup level is established in accordance with the requirements in WAC 173-204-560(2). The sediment cleanup level is initially established at the sediment cleanup objective and may be adjusted upward as appropriate based on whether it is technically possible to meet the sediment cleanup objective and whether meeting the sediment cleanup objective will have a net adverse environmental impact on the aquatic environment as specified in WAC 173-204-560 (2)(a)(i)(B). A sediment cleanup level may not be adjusted upward above the cleanup screening level. The sediment cleanup level, in combination with the point of compliance, typically defines the area or volume of sediment at a site or sediment cleanup unit that must be addressed by the cleanup action.
 - (A) **Sediment cleanup objective.** The sediment cleanup objective defines the goal for protection of human health and environment. This goal is expected to be achieved through a combination of cleanup actions and source control. The sediment cleanup objective is established in accordance with the requirements in WAC 173-204-560(3). If a risk-based concentration is below the natural background level or practical quantitation limit, then the sediment cleanup objective is established at a concentration equal to the practical quantitation limit or natural background, whichever is higher.

Sediment Management Standards**WAC 173-204-500**

- (B) **Cleanup screening level.** The cleanup screening level is established in accordance with the requirements in WAC 173-204-560(4). If a risk-based concentration is below the regional background level or practical quantitation limit, then the cleanup screening level is established at a concentration equal to the practical quantitation limit or regional background, whichever is higher.
- (ii) **Point of compliance.** A point of compliance is the location within the site or sediment cleanup unit where sediment cleanup levels must be achieved. The point of compliance is established in accordance with the requirements in WAC 173-204-560(6).
- (b) **Cleanup actions.** WAC 173-204-570 establishes requirements for cleanup actions for contaminated sediment. The cleanup actions must achieve sediment cleanup standards within the site or sediment cleanup unit, as applicable. Cleanup actions usually consist of a combination of active and passive actions. At sites and sediment cleanup units where there are ongoing sources, the cleanup actions will usually also include source control measures.
- (i) **Active cleanup actions.** Sediment contamination may be addressed by active cleanup actions such as dredging, capping, treatment, and enhanced natural recovery. Active cleanup actions are preferred over passive cleanup actions.
- (ii) **Passive cleanup actions.** When appropriate, passive cleanup actions, such as monitored natural recovery and institutional controls, may be used in combination with active cleanup actions and source control measures to address sediment contamination.
- (iii) **Source control.** Source control measures consist of controlling ongoing sources to limit discharges of contaminants that accumulate in sediment. Source control measures may be required as part of a cleanup action to prevent recontamination of the site or sediment cleanup unit above the sediment cleanup level.
- (c) **Presumption of protectiveness.** Sediment cleanup actions that achieve sediment cleanup levels at the applicable points of compliance and comply with applicable laws are presumed to be protective of human health and the environment.
- (6) **Applicability of new sediment cleanup standards.**
- (a) The department shall determine the sediment cleanup standards that apply to a site or sediment cleanup unit based on the rules in effect under this part at the time the department issues a final cleanup action plan or similar decision document as described in WAC 173-204-575.
- (b) A site or sediment cleanup unit cleaned up with sediment cleanup standards determined in (a) of this subsection shall not be subject to further cleanup action due solely to subsequent amendments of the requirements in this part governing the establishment of sediment cleanup standards, unless the department determines on a case-by-case basis that the previous cleanup action is no longer sufficiently protective of human health and the environment.

Sediment Management Standards

WAC 173-204-500

[Statutory Authority: Chapter 70.105D RCW. 13-06-014 (Order 08-07), § 173-204-500, filed 2/25/13, effective 9/1/13. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-500, filed 3/27/91, effective 4/27/91.]

Adoption Date: February 22, 2013

Page 71

Sediment Management Standards

WAC 173-204-500

This page intentionally blank.

Adoption Date: February 22, 2013

Page 72

Sediment Management Standards

WAC 173-204-505

WAC 173-204-505 Definitions.

For purposes of this part, in cases where a definition does not exist in this part or WAC 173-204-200 the definitions in chapter 173-340 WAC will apply unless the context indicates otherwise. For the purpose of this part, the following definitions shall apply:

- (1) **"Active cleanup action"** means a cleanup action requiring physical construction to achieve sediment cleanup standards. Active cleanup actions include dredging, capping, treatment, and enhanced natural recovery. Passive cleanup actions such as monitored natural recovery and institutional controls are not active cleanup actions for purposes of sediment cleanup only.
- (2) **"Applicable laws"** means all legally applicable requirements specified in WAC 173-340-710(3) and those requirements that the department determines, based on the criteria in WAC 173-340-710(4), are relevant and appropriate requirements. Relevant and appropriate requirements may also include those requirements established under local or tribal laws that the department determines meet the criteria in WAC 173-340-710(4).
- (3) **"Beneficial reuse"** means reuse of sediment from the site, or a separated portion of the sediment (such as the gravel fraction), that utilizes the physical characteristics and properties of the sediment in place of other material without requiring the use of engineered or institutional controls to protect human health or the environment. Examples of beneficial reuse include habitat restoration or enhancement, mine reclamation, landfill cover material, asphalt or concrete aggregate, or use of organic fines in manufactured topsoil.
- (4) **"Biologically active zone"** means the sediment depth determined by the department where the species critical to the function, diversity, and integrity of the benthic community are located. Metrics such as biomass and abundance may be used to define the vertical extent of the biologically active zone. These species can include endemic and keystone animals, plants, or other species. Abiotic factors such as groundwater upwelling, salt wedges, water temperature, dissolved oxygen, and hyporheic flow can affect the vertical distribution of organisms in the biologically active zone.
- (5) **"Cleanup action"** means any remedial action, except an interim action, taken at a sediment site or sediment cleanup unit to eliminate, render less toxic, stabilize, contain, immobilize, isolate, treat, destroy, or remove contaminants that complies with sediment cleanup standards and other applicable laws. A remedial action that does not comply with sediment cleanup standards and other applicable laws is an interim action.
- (6) **"Cleanup screening level"** means the maximum allowed concentration of any contaminant and level of biological effects permissible at the site or sediment cleanup unit per procedures in WAC 173-204-560(4) after completion of the cleanup action. Cleanup screening levels are also used to identify and assess the hazard of sites under WAC 173-204-510 and 173-204-520.
- (7) **"Contaminant"** means any hazardous substance that does not occur naturally or occurs at greater than natural background levels.
- (8) **"Enhanced natural recovery"** means a cleanup action that uses human intervention to accelerate the process of natural recovery. An example of enhanced natural recovery is the placement of a thin clean layer of sediment over an area of contaminated sediment to

Sediment Management Standards**WAC 173-204-505**

naturally mix with the contaminated sediment and reduce the contaminant concentrations or toxicity followed by a period of monitoring to determine the effectiveness.

- (9) **"Include"** means included, but not limited to.
- (10) **"Monitored natural recovery"** means a cleanup action that is a form of natural recovery that includes regular monitoring of sediment quality, tissue, benthic infauna, and/or biota as appropriate to assess the effectiveness of natural recovery to restore sediment quality.
- (11) **"Natural background"** means the concentration of a hazardous substance consistently present in the environment that has not been influenced by localized human activities. For example, several metals and radionuclides naturally occur in the bedrock, sediment, and soil of Washington state due solely to the geologic processes that formed these materials and the concentration of these hazardous substances would be considered natural background. Also, low concentrations of some particularly persistent organic compounds such as polychlorinated biphenyls (PCBs) can be found in surficial soils and sediment throughout much of the state due to global distribution of these hazardous substances. These low concentrations would be considered natural background. Similarly, concentrations of various radionuclides that are present at low concentrations throughout the state due to global distribution of fallout from bomb testing and nuclear accidents would be considered natural background.
- (12) **"Natural recovery"** means physical, chemical or biological processes that act, without human intervention, to reduce the toxicity or concentration of contaminated sediment. An example of natural recovery is the natural deposition of a layer of clean sediment over an area of contaminated sediment resulting in burial over time of contaminated sediment below the biologically active zone. The natural process of sediment mixing, and degradation of some contaminants, such as polycyclic aromatic hydrocarbons, can also contribute to natural recovery.
- (13) **"Point of compliance"** means the locations within a site or sediment cleanup unit where sediment cleanup levels must be met.
- (14) **"Practicable"** means capable of being designed, constructed and implemented in a reliable and effective manner including consideration of cost. When considering cost under this analysis, an alternative shall not be considered practicable if the incremental costs of the alternative are disproportionate to the incremental degree of benefits provided by the alternative over other lower cost alternatives.
- (15) **"Practical quantitation limit"** means the lowest concentration that can be reliably measured within specified limits of precision, accuracy, representativeness, completeness, and comparability during routine laboratory operating conditions, using department approved methods. When the limit for an analytical method is higher than the concentrations based on protection of human health or the environment, the department may require the use of another method to lower the practical quantitation limit.
- (16) **"Regional background"** means the concentration of a contaminant within a department-defined geographic area that is primarily attributable to diffuse sources, such as atmospheric deposition or storm water, not attributable to a specific source or release. See WAC 173-204-560(5) for the procedures and requirements for establishing regional background.

Sediment Management Standards

WAC 173-204-505

- (17) **"Sediment cleanup level"** means the concentration or level of biological effects for a contaminant in sediment that must be achieved and is determined by the department to be protective of human health and the environment under the authority of chapter 70.105D RCW. The sediment cleanup level can be established between the sediment cleanup objective and cleanup screening level in accordance with the requirements in WAC 173-204-560(2).
- (18) **"Sediment cleanup objective"** means the goal for protection of human health and the environment and is established under the authority of chapter 70.105D RCW. The sediment cleanup objective is established in accordance with the requirements in WAC 173-204-560(3). Sediment cleanup objectives are also used to identify and assess the hazard of sites under WAC 173-204-510 and 173-204-520.
- (19) **"Sediment cleanup standard"** means the standards adopted under RCW 70.105D.030 (2)(e). Establishing sediment cleanup standards requires specification of the following:
- (a) The chemical concentration or level of biological effects for a contaminant in sediment that is determined by the department to be protective of human health and the environment (sediment cleanup level);
 - (b) The location at the site or sediment cleanup unit where those sediment cleanup levels must be achieved (point of compliance); and
 - (c) Additional regulatory requirements that apply to a cleanup action because of the type of action and/or the location of the site. These requirements are specified in applicable laws and are generally established in conjunction with the selection of a specific cleanup action.
- (20) **"Sediment cleanup unit"** means a discrete subdivision of a sediment site designated by the department for the purpose of expediting cleanups. A sediment cleanup unit may be established based on unique chemical concentrations or parameters, regional background, environmental, spatial, or contaminant source characteristics, or other methods determined appropriate by the department, e.g., development-related cleanups, cleanup under piers, cleanup in eelgrass beds, and cleanup in navigational lanes.
- (21) **"Sediment recovery zone"** means an area authorized by the department within a site or sediment cleanup unit where the department has determined the cleanup action cannot achieve the applicable sediment cleanup standards within ten years after completion of construction of the active components of the cleanup action. Sediment recovery zones must meet the requirements in WAC 173-204-590 and be authorized by the department under WAC 173-204-575.
- (22) **"Surface sediment"** or **"sediment"** means settled particulate matter located at or below the ordinary high water mark, where the water is present for a minimum of six consecutive weeks, to which biota (including benthic infauna) or humans may potentially be exposed, including that exposed by human activity (e.g., dredging).
- (23) **"Technically possible"** means capable of being designed, constructed and implemented in a reliable and effective manner, regardless of cost.

[Statutory Authority: Chapter 70.105D RCW, 13-06-014 (Order 08-07), § 173-204-505, filed 2/25/13, effective 9/1/13.]

Sediment Management Standards

WAC 173-204-505

This page intentionally blank.

Adoption Date: February 22, 2013

Page 76

Sediment Management Standards**WAC 173-204-510****WAC 173-204-510 Identifying sediment station clusters of potential concern.**

- (1) **Data analysis.** The department shall analyze sediment sampling data to identify station clusters of potential concern and station clusters of low concern. Station clusters of potential concern shall be further evaluated using the hazard assessment standards of WAC 173-204-520. Station clusters of low concern shall remain on the inventory and no further cleanup action determinations shall be made by the department until the stations are reexamined per subsection (5) of this section.
- (2) **Station clusters.** A station cluster is defined as any number of stations that are determined by the department to be spatially and chemically similar. For the purpose of identifying a station cluster of potential concern, three stations with the highest chemical concentration for any particular chemical or the highest degree of biological effects as identified in WAC 173-204-562 or 173-204-563, as applicable are selected from a station cluster. This procedure may be repeated for multiple chemicals, recognizing that the three stations with the highest concentration for each particular chemical may be different and the respective areas for all chemicals may overlap. The department shall identify station clusters of potential concern using the process specified in this subsection.
 - (a) Identify, if available, the three stations within a station cluster with the highest concentration of each chemical identified in WAC 173-204-562 or 173-204-563, as applicable.
 - (i) For each chemical identified in (a) of this subsection, determine the average concentration for the chemical at the three stations identified.
 - (ii) If the average chemical concentration for any three stations identified in (a) of this subsection exceeds the applicable cleanup screening level in WAC 173-204-562 or 173-204-563, then the station cluster shall be defined as a station cluster of potential concern.
 - (b) Identify, if available, three stations within the station cluster with the highest level of biological effects for the biological tests identified in WAC 173-204-562 or 173-204-563, as applicable. If the level of biological effects at each of the three stations from this subsection exceeds the applicable cleanup screening level in WAC 173-204-562 or 173-204-563, then the station cluster shall be defined as a station cluster of potential concern.
 - (c) If the department determines that each of three stations within a station cluster exceed the following criteria, then the station cluster shall be defined as a station cluster of potential concern:
 - (i) The applicable human health and regional background cleanup screening levels in WAC 173-204-560(4);
 - (ii) The other toxic, radioactive, biological, or deleterious substances criteria in WAC 173-204-562 or 173-204-563, as applicable; or
 - (iii) The nonanthropogenically affected criteria of WAC 173-204-562 or 173-204-563, as applicable.
 - (d) If none of the conditions of (a) through (c) of this subsection apply, then the station cluster shall be defined as a station cluster of low concern.

Sediment Management Standards

WAC 173-204-510

- (3) **Notification.** When a station cluster of potential concern has been identified, the department shall issue notification, as appropriate, to the landowners, lessees, onsite dischargers, adjacent dischargers, and other persons determined appropriate by the department if the hazard assessment as defined in WAC 173-204-530(3) results in identification of a cleanup site.
- (4) **No further cleanup action.** No further cleanup action determinations shall be taken with station clusters of low concern until new information is available and the stations reexamined per subsection (5) of this section. Station clusters of low concern shall receive no further consideration for active cleanup, unless new information indicates an increase of chemical contamination at the stations in question. Station clusters of low concern shall be evaluated by the department for improved source control and/or monitoring requirements of this part.
- (5) **Reevaluation.** The department may at any time reexamine a station or group of stations to reevaluate and identify station clusters of potential concern following the procedures of subsection (2) of this section when new information demonstrates to the department's satisfaction that reexamination actions are necessary to fulfill the purposes of WAC 173-204-500 through 173-204-590.

[Statutory Authority: Chapter 70.105D RCW, 13-06-014 (Order 08-07), § 173-204-510, filed 2/25/13, effective 9/1/13. Statutory Authority: RCW 90.48.220, 96-02-058, § 173-204-510, filed 12/29/95, effective 1/29/96. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW, 91-08-019 (Order 90-41), § 173-204-510, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards**WAC 173-204-520****WAC 173-204-520 Hazard assessment and site identification.**

- (1) **Purpose.** A hazard assessment shall be performed to gather existing and available information to further characterize each station cluster of potential concern identified per WAC 173-204-510.
- (2) **Hazard assessment requirements.** On-site dischargers, lessees, landowners, and adjacent dischargers shall submit, upon the department's request, all existing and available information or, if determined necessary by the department, shall perform sampling for a known or suspected release that would enable the department to:
 - (a) Determine the concentration and/or areal extent and depth of sediment contamination at the station cluster of potential concern by:
 - (i) Identifying the contaminants exceeding the applicable sediment cleanup objectives of WAC 173-204-562 or 173-204-563;
 - (ii) Identifying individual stations within the station cluster of potential concern exceeding the applicable sediment cleanup screening levels of WAC 173-204-562 or 173-204-563;
 - (iii) Identifying the level of toxicity to the applicable biological test organisms of WAC 173-204-562 or 173-204-563;
 - (iv) Determining where the applicable sediment cleanup objectives of WAC 173-204-562 or 173-204-563, for any given chemical, is met;
 - (v) Determining if concentrations of chemicals exist that exceed applicable cleanup screening levels of WAC 173-204-560; and
 - (vi) Defining the location where the cleanup screening level as defined in WAC 173-204-560 is not met.
 - (b) Identify and characterize the present and historic source or sources of the contamination;
 - (c) Identify the location of sediment impact zones authorized under WAC 173-204-415;
 - (d) Identify sensitive resources in the vicinity of the station cluster of potential concern;
 - (e) Compile other information as determined necessary by the department for evaluating sites under WAC 173-204-530; and
 - (f) Compile existing and available information from other federal, state, and local governments.
- (3) **Identification of cleanup sites.** To identify cleanup sites, the department shall use all available information of acceptable quality gathered from the hazard assessment to evaluate station clusters of potential concern identified pursuant to WAC 173-204-510(2). For the purpose of identifying a cleanup site per the procedures of this subsection, three stations with the highest chemical concentration for any particular chemical or the highest degree of biological effects as identified in WAC 173-204-562 or 173-204-563, as applicable, are selected from a station cluster of potential concern. This procedure may be repeated for multiple chemicals recognizing that the three stations with the highest concentration for each particular chemical may be different and the respective areas for all chemicals may

Sediment Management Standards**WAC 173-204-520**

overlap. The department shall review the list of station clusters of potential concern to identify cleanup sites via the following process:

- (a) Station clusters of potential concern that meet the conditions in WAC 173-204-510 (2)(a)(ii) or (b) shall be defined as cleanup sites if concentrations are above the regional background cleanup screening level in WAC 173-204-560(4), as applicable;
- (b) For the purpose of identifying a cleanup site per the procedures of this subsection, stations that meet the biological standards of WAC 173-204-562(3) or 173-204-563(3), as applicable, shall not be included in the evaluation of chemical contaminant concentrations for benthic community toxicity;
- (c) After completion of the hazard assessment, if the conditions of (a) or (b) of this subsection do not apply, then the station cluster is defined as a station cluster of low concern for benthic community toxicity; and
- (d) If the department determines that each of three stations within the station cluster of potential concern exceed any one of the following criteria, then the station cluster of potential concern may be defined as a cleanup site or area for potential further investigation:
 - (i) The applicable human health and regional background cleanup screening levels in WAC 173-204-560(4);
 - (ii) The other toxic, radioactive, biological, or deleterious substances criteria in WAC 173-204-562 or 173-204-563, as applicable; or
 - (iii) The nonanthropogenically affected criteria of WAC 173-204-562 or 173-204-563, as applicable.

[Statutory Authority: Chapter 70.105D RCW. 13-06-014 (Order 08-07), amended and recodified as § 173-204-520, filed 2/25/13, effective 9/1/13. Statutory Authority: RCW 90.48.220. 96-02-058, § 173-204-530, filed 12/29/95, effective 1/29/96. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-530, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards**WAC 173-204-530****WAC 173-204-530 Evaluation and listing of sites.**

- (1) **Purpose.** The department shall prepare and maintain a list of contaminated sediment sites in the order of their relative risk to human health and the environment. From this list, the department shall select sites where action shall be taken.
- (2) **Site evaluation.** The department shall evaluate each sediment cleanup site identified by the procedures in WAC 173-204-520 on a consistent basis using procedures approved by the department. The purpose of the evaluation is to estimate, based on technical information compiled during the hazard assessment procedures in WAC 173-204-520, the relative potential risk posed by the site to human health and the environment. Information obtained during the hazard assessment, shall be included in the site evaluation.
- (3) **Considerations in site evaluation.** In conducting sediment site evaluations, the department shall assess both human health hazard and ecological hazard, and consider chemical toxicity, affected resources, and site characteristics for both types of hazards. The department shall also use best professional judgment and other information as necessary on a case-by-case basis to conduct site evaluations.
- (4) **Site reevaluations.** The department may, at its discretion, reevaluate a site. To reevaluate a site, the department shall use any additional information within the scope of the evaluation criteria and best professional judgment to establish that a significant change should result.
- (5) **Listing of sites.**
 - (a) Contaminated sediment sites shall be placed on a list. The list shall describe the current status of cleanup action at each site.
 - (b) The department shall routinely publish and make the list available to be used in conjunction with a review of ongoing and proposed regulatory actions to determine where and when a cleanup action should be taken. The department shall also make the list available to landowners and dischargers at or near listed sites, and to the public.
- (6) **Site delisting.**
 - (a) The department may remove a site from the list only after it has determined that:
 - (i) All cleanup actions, except confirmational monitoring and all other actions required in the cleanup action plan or equivalent document under WAC 173-204-575, have been completed and all sediment cleanup standards have been achieved; or
 - (ii) The listing of the site was erroneous.
 - (b) A site owner or operator may request that a site be removed from the list by submitting a petition to the department. The petition shall state the reason for the site delisting request, and as determined appropriate by the department, shall include thorough documentation of all investigations performed, all cleanup actions taken, and all compliance monitoring data and results to demonstrate to the department's satisfaction that the sediment cleanup standards have been achieved. The department may require payment of costs incurred for review and verification of the work

Sediment Management Standards

WAC 173-204-530

performed. The department shall review such petitions, however the timing of the review shall be at its discretion and as resources may allow.

- (c) The department shall maintain a record of sites that have been removed from the list under (a) of this subsection. This record shall be made available to the public on request.
- (d) The department shall provide public notice and an opportunity to comment when the department proposes to remove a site from the list.
- (7) **Site relisting.** The department may relist a site which has previously been removed if it determines that the site requires further cleanup action.
- (8) **Relationship to hazardous sites list.** The department may additionally evaluate cleanup sites on the site list developed under subsection (5) of this section for possible inclusion on the hazardous sites list published under WAC 173-340-330.

[Statutory Authority: Chapter 70.105D RCW, 13-06-014 (Order 08-07), amended and recodified as § 173-204-530, filed 2/25/13, effective 9/1/13. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW, 91-08-019 (Order 90-41), § 173-204-540, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards**WAC 173-204-540****WAC 173-204-540 Types of cleanup and authority.**

- (1) **Purpose.** This section describes the authorities and administrative options that may be used to address a release or threatened release of a contaminant to sediment that may pose a threat to human health or the environment. This section also describes the process for selecting an appropriate authority and administrative option.
- (2) **Authority.** This part shall apply to a release or threatened release of a contaminant to sediment that may pose a threat to human health or the environment. The department recognizes that such a release may also be addressed under other authorities. The department shall use best professional judgment on a case-by-case basis to determine the appropriate authority for addressing such a release. The department may initiate remedial actions under this part or may determine that another authority is more appropriate. When determining the appropriate authority, the department's decision may include the following considerations:
 - (a) Source of contaminants requiring cleanup including spills, dredging actions, and wastewater and/or storm water discharges;
 - (b) Significance of contamination threat to human health and the environment including the degree of contamination and types and number of contaminants;
 - (c) Public comments received concerning the contaminant threat to human health and the environment;
 - (d) Enforcement compliance history of the landowner(s) and/or discharger(s);
 - (e) Status of existing or pending federal, state, or local legal orders or administrative actions; and
 - (f) Size of cleanup action proposed or determined necessary.
- (3) **Administrative options.** Administrative options used to conduct remedial actions at sites and sediment cleanup units include:
 - (a) **Department-conducted or supervised remedial actions.** The department may conduct or require others to conduct remedial actions at sites or sediment cleanup units under chapter 70.105D RCW;
 - (b) **Federal-conducted or supervised remedial actions.** The federal government may conduct or require others to conduct remedial actions at sites or sediment cleanup units pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. Sec. 9601 et seq.). When evaluating federal remedial actions, the department shall consider all requirements in this part to be legally applicable requirements under 42 U.S.C. Sec. 9621(d). Federal remedial actions may be considered by the department to meet the requirements of this part provided:
 - (i) The remedial actions are consistent with the requirements in this part;
 - (ii) The state has concurred with the remedial action; and
 - (iii) An opportunity was provided for the public to comment on the remedial action.
 - (c) **Incidental remedial actions.** Incidental remedial actions may be conducted when other state or federally permitted activities are ongoing in and/or around the site.

Sediment Management Standards

WAC 173-204-540

Early coordination of incidental remedial actions with the department is encouraged to ensure such actions meet the requirements in this part and chapter 70.105D RCW.

[Statutory Authority: Chapter 70.105D RCW. 13-06-014 (Order 08-07), amended and recodified as § 173-204-540, filed 2/25/13, effective 9/1/13. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-550, filed 3/27/91, effective 4/27/91.]

Adoption Date: February 22, 2013

Page 84

Sediment Management Standards**WAC 173-204-550****WAC 173-204-550 Remedial investigation and feasibility study.**

- (1) **Purpose.** The purpose of a remedial investigation/feasibility study is to collect, develop, and evaluate sufficient information regarding a site or sediment cleanup unit for the department to establish sediment cleanup standards and select a cleanup action under this part.
- (2) **Scope.** The scope of a remedial investigation/feasibility study depends on many factors, including the nature and extent of contamination, the exposure pathways of concern, the natural resources potentially impacted by the contamination, the characteristics of the site or sediment cleanup unit, and the type of cleanup action alternatives likely to be evaluated under WAC 173-204-570 through 173-204-575. In all cases, sufficient information must be collected, developed, and evaluated to enable the department to establish sediment cleanup standards and select cleanup actions under this part.
- (3) **Administrative requirements.**
 - (a) Unless otherwise directed by the department, a remedial investigation/feasibility study must be completed before a cleanup action is selected under WAC 173-204-570 and 173-204-575.
 - (b) Before conducting a remedial investigation, a work plan must be submitted to and approved by the department.
 - (c) As directed by the department, a remedial investigation and a feasibility study may be conducted as separate steps in the cleanup process and submitted as separate reports or combined into a single step and report.
 - (d) Remedial investigation and feasibility study reports must be submitted to the department for review and approval.
- (4) **Remedial investigation work plan.** The remedial investigation work plan shall include the following:
 - (a) Public participation plan;
 - (b) A summary of available information regarding the site and data gaps needing to be addressed by the remedial investigation;
 - (c) A conceptual site model, including current and potential human and ecological receptors and exposure pathways;
 - (d) Cleanup action alternatives that are likely to be considered in the feasibility study;
 - (e) Sampling plan and recordkeeping in compliance with WAC 173-204-600 through 173-204-610. Analytical methods and limits shall be sufficiently sensitive to measure concentrations at levels of potential regulatory concern. Proposed sampling locations should consider the movement and deposition patterns of sediments;
 - (f) Site safety plan to meet the requirements of the Occupational Safety and Health Act of 1970 (29 U.S.C. Sec. 651 et seq.) and the Washington Industrial Safety and Health Act (chapter 49.17 RCW), and regulations promulgated pursuant thereto. These requirements are subject to enforcement by the designated federal and state agencies. Actions taken by the department under this part do not constitute an exercise of

Sediment Management Standards**WAC 173-204-550**

statutory authority within the meaning of section (4)(b)(1) of the Occupational Safety and Health Act;

- (g) A proposed schedule for completion of the remedial investigation/feasibility study; and
 - (h) Other information as required by the department.
- (5) **Public participation plan requirements.** The public participation plan shall encourage early, coordinated, and effective public involvement commensurate with the nature of the proposed cleanup action, the level of public concern, and the existence of, or potential for, adverse effects on biological resources and/or a threat to human health. The plan shall be consistent with WAC 173-340-600 and include the following information:
- (a) When public notice will occur, the length of the comment periods accompanying each notice, the potentially affected vicinity, and any other areas to be provided notice;
 - (b) Where public information will be located to provide information about the site;
 - (c) Methods for identifying the public's concerns such as interviews, questionnaires, and community group meetings;
 - (d) Methods for providing information to the public such as press releases, public meetings, fact sheets, and listservs;
 - (e) Coordination of public participation requirements mandated by other applicable laws;
 - (f) Amendments to the planned public involvement activities; and
 - (g) Any other information required by the department.
- (6) **Remedial investigation report.** The remedial investigation report shall include the following as appropriate:
- (a) **General site information.** General information, including: Project title; name, address, and phone number of project coordinator; legal description of the cleanup site; area and volume dimensions of the site; present and past owners and operators; present owners and operators of contaminant source discharges to the site and their respective operational history; and other pertinent information required by the department;
 - (b) **Sediment cleanup unit.** If applicable, the proposed sediment cleanup unit boundary and basis for the boundary;
 - (c) **Sediment cleanup standards.** For each contaminant, identify the following and the basis for the proposed values:
 - (i) The proposed sediment cleanup objective;
 - (ii) The proposed cleanup screening level;
 - (iii) The proposed sediment cleanup standard including the sediment cleanup level and point of compliance;
 - (d) **Site conditions map.** An existing site conditions map which illustrates site features as follows:

Sediment Management Standards**WAC 173-204-550**

- (i) Property boundaries;
 - (ii) The site boundary as defined by the individual contaminants exceeding the proposed sediment cleanup standards as specified in WAC 173-204-560. Delineations shall be made at the point where the concentration of the contaminants would meet the criteria in (c) of this subsection;
 - (iii) Proposed sediment cleanup unit boundary, if applicable;
 - (iv) Surface and subsurface structures topography;
 - (v) Utility lines;
 - (vi) Navigation lanes; and
 - (vii) Other pertinent information determined by the department;
- (e) **Investigation.** Sufficient investigation to characterize the distribution of sediment contamination and the threat or potential threat to human health and the environment. Where applicable, these investigations shall address the following:
- (i) **Surface water and sediments.** Investigations of sediment, surface water hydrodynamics, and sediment transport mechanisms to characterize significant hydrologic features such as:
 - (A) Surface water drainage patterns, quantities and flow rates;
 - (B) Areas of sediment erosion and deposition including estimates of sedimentation rates;
 - (C) Contaminant migration routes;
 - (D) Areal and vertical distribution and concentrations of contaminants in sediment; and
 - (E) Recontamination potential of sediments which are likely to influence the type and rate of contaminant migration, or are likely to affect the ability to implement alternative cleanup actions;
 - (ii) **Geology and groundwater system characteristics.** Investigations of the geology and hydrogeology to characterize the physical properties and distribution of sediment types, and the characteristics of groundwater flow rate, groundwater gradient, groundwater discharge areas, and groundwater quality data which may affect cleanup action alternatives evaluations;
 - (iii) **Climate.** Information regarding local and regional climatological characteristics which are likely to affect surface water hydrodynamics, groundwater flow characteristics, and migration of sediment contaminants such as: Seasonal patterns of rainfall; the magnitude and frequency of significant storm events; and prevailing wind direction and velocity;
 - (iv) **Land use.** Information characterizing human populations exposed or potentially exposed to sediment contaminants, the present and proposed uses of the land, zoning for contiguous shoreline areas, and the aquatic state land use classification under chapter 332-30 WAC; and

Sediment Management Standards**WAC 173-204-550**

- (v) **Natural resources and habitat.** Information to determine the impact or potential impact of sediment contaminants on ecological receptors, natural resources and sensitive habitat of the area such as spawning areas, nursery grounds, shellfish or eelgrass beds and other plant and animal species;
- (f) **Confirmed and suspected contaminant sources.** A description of the confirmed and suspected sources, including the location and quantity, as well as any active and inactive waste disposal facilities. Where determined relevant by the department, the following information shall be obtained by the department from the responsible discharger:
 - (i) The physical and chemical characteristics and the biological effects of sediment contaminant sources;
 - (ii) The status of source control actions for permitted and unpermitted contaminant sources; and
 - (iii) Existing compliance time frames for permitted contaminant sources which affect or potentially affect implementation of the timing and scope of the cleanup action alternatives;
- (g) **Human health risk assessment.** The current and potential significant threats to human health posed by sediment contamination shall be evaluated under WAC 173-204-561; and
- (h) Any other information required by the department.
- (7) **Feasibility study report.** The feasibility study report shall include the following as appropriate:
 - (a) If the feasibility study is not combined with the remedial investigation in one report, a summary of the remedial investigation results including:
 - (i) Conceptual site model to provide the basis from which cleanup action alternatives are developed and evaluated;
 - (ii) If applicable, the proposed sediment cleanup unit boundary and the basis for the boundary;
 - (iii) The proposed biologically active zone and the basis for the zone;
 - (iv) For each contaminant, the proposed sediment cleanup standard, including sediment cleanup level and point of compliance, and basis for the standard; and
 - (v) Maps, cross-sections, and calculations illustrating the location, estimated amount and concentration distribution of contaminants above proposed sediment cleanup levels and the proposed sediment cleanup objectives and cleanup screening levels;
 - (b) Results of any additional investigations or technology evaluations conducted after completion of the remedial investigation report;
 - (c) Each feasibility study shall include an evaluation of alternative cleanup actions that protect human health and the environment by eliminating, reducing, or otherwise controlling risks posed through each exposure pathway and migration route. The

Sediment Management Standards

WAC 173-204-550

number and types of alternatives to be evaluated shall take into account the characteristics and complexity of the site and be evaluated using the requirements in WAC 173-204-570;

- (d) Identification and evaluation of a reasonable number and type of alternatives;
 - (e) Identification of alternatives eliminated that do not meet the requirements in WAC 173-204-570;
 - (f) Documentation of the alternatives evaluation process. For each alternative evaluated include the following:
 - (i) The location and estimated amount of each contaminant to be removed or treated by the alternative and the estimated time frame in which removal or treatment will occur; and
 - (ii) The location, estimated amount, and projected concentration distribution of each contaminant remaining above proposed sediment cleanup levels after implementation of the alternative;
 - (g) The preferred remedy and the basis for selection;
 - (h) Applicable laws specific to the proposed preferred remedy, including a description of permit/approval conditions identified in consultation with the permitting agencies;
 - (i) Identification of any proposed sediment recovery zone and justification for this zone under WAC 173-204-590;
 - (j) Proposed monitoring plan during and after cleanup consistent with the provisions in WAC 173-204-600;
 - (k) Environmental impact. Sufficient information shall be provided to fulfill the requirements of chapter 43.21C RCW, the State Environmental Policy Act, for the proposed preferred remedy. Discussions of significant short-term and long-term environmental impacts, significant irrevocable commitments of natural resources, significant alternatives including mitigation measures, and significant environmental impacts which cannot be mitigated shall be included; and
 - (l) Any other information required by the department.
- (8) **Sampling access.** In cases where the person(s) responsible for cleanup is not able to secure access to sample sediment on lands subject to a remedial investigation and feasibility study required by the department, the department may facilitate negotiations or other proceedings to secure access to the lands. Requests for department facilitation of land access for sampling shall be submitted to the department in writing by the person(s) responsible for the remedial investigation and feasibility study.

[Statutory Authority: Chapter 70.105D RCW. 13-06-014 (Order 08-07), amended and recodified as § 173-204-550, filed 2/25/13, effective 9/1/13. Statutory Authority: RCW 90.48.220. 96-02-058, § 173-204-560, filed 12/29/95, effective 1/29/96. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-560, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards

WAC 173-204-550

This page intentionally blank.

Adoption Date: February 22, 2013

Page 90

Sediment Management Standards

WAC 173-204-560

WAC 173-204-560 Sediment cleanup standards--General requirements.

- (1) **Applicability and purpose.** This section specifies the methods for establishing sediment cleanup standards under chapter 70.105D RCW for sites where there has been a release or threatened release of contaminants to sediment.
- (2) **Sediment cleanup levels.** The sediment cleanup level is the concentration or level of biological effects of a contaminant in sediment determined by the department to be protective of human health and the environment.
 - (a) **Method for establishing sediment cleanup levels.** The sediment cleanup level shall be established in accordance with the following requirements:
 - (i) **Initial level.** The sediment cleanup level shall initially be established at the sediment cleanup objective;
 - (ii) **Upward adjustments.** The sediment cleanup level may be adjusted upward from the sediment cleanup objective based on the following site-specific factors:
 - (A) Whether it is technically possible to achieve the sediment cleanup level at the applicable point of compliance within the site or sediment cleanup unit; and
 - (B) Whether meeting the sediment cleanup level will have a net adverse environmental impact on the aquatic environment, taking into account the short- and long-term positive effects on natural resources, habitat restoration, and habitat enhancement and the short- and long-term adverse impacts on natural resources and habitat caused by cleanup actions;
 - (iii) **Limit on upward adjustments.** A sediment cleanup level may not be adjusted upward above the cleanup screening level.
 - (b) **Establishment of more stringent sediment cleanup levels.** The department may establish sediment cleanup levels more stringent than those established under (a) of this subsection when, based on a site-specific evaluation, the department determines that such levels are necessary to protect human health and the environment. The sediment cleanup level may not be established below the sediment cleanup objective.
- (3) **Sediment cleanup objectives.** The sediment cleanup objective for a contaminant shall be established as the highest of the following levels:
 - (a) The lowest of the following risk-based levels:
 - (i) The concentration of the contaminant based on protection of human health as specified in WAC 173-204-561(2);
 - (ii) The concentration or level of biological effects of the contaminant based on benthic toxicity as specified in WAC 173-204-562 or 173-204-563, as applicable;
 - (iii) The concentration or level of biological effects of the contaminant estimated to result in no adverse effects to higher trophic level species as specified in WAC 173-204-564; and

Sediment Management Standards

WAC 173-204-560

- (iv) Requirements in other applicable laws;
 - (b) Natural background; and
 - (c) Practical quantitation limit.
- (4) **Cleanup screening levels.** The cleanup screening level for a contaminant shall be established as the highest of the following levels:
 - (a) The lowest of the following risk-based levels:
 - (i) The concentration of the contaminant based on protection of human health as specified in WAC 173-204-561(3);
 - (ii) The concentration or level of biological effects of the contaminant based on benthic toxicity as specified in WAC 173-204-562 or 173-204-563, as applicable;
 - (iii) The concentration or level of biological effects of the contaminant estimated to result in no adverse effects to higher trophic level species as specified in WAC 173-204-564; and
 - (iv) Requirements in other applicable laws;
 - (b) Regional background as defined in subsection (5) of this section; and
 - (c) Practical quantitation limit.
- (5) **Regional background.** Regional background for a contaminant shall be established by the department in accordance with the requirements of this subsection.
 - (a) The department will determine the geographic area for establishing regional background for a contaminant.
 - (b) If a site or sediment cleanup unit is located within a geographic area where regional background for a contaminant has not been established, the department may:
 - (i) Compile and collect sufficient sampling data to establish regional background;
 - (ii) Require any potentially liable person to compile and collect sufficient sampling data, as determined by the department, to establish regional background; or
 - (iii) If there is currently insufficient sampling data to establish regional background, after consulting with any potentially liable person, establish regional background at natural background.
 - (c) The department expects that regional background will usually be greater than natural background. If the department determines, based on sampling data, that regional background is not greater than natural background, the department will establish regional background at natural background.
 - (d) Calculation of regional background for a contaminant must exclude samples from areas with an elevated level of contamination due to the direct impact of known or suspected contaminant sources, including areas within a sediment cleanup unit or depositional zone of a discharge.
 - (e) The department will determine the appropriate statistical analyses, number and type

Sediment Management Standards

WAC 173-204-560

of samples, and analytical methods to establish a regional background on a case-by-case basis.

- (f) If a water body is not beyond the direct influence of a significant contaminant source, the department may use alternative geographic approaches to determine regional background for a contaminant. Several factors must be evaluated when determining an alternate geographic approach including:
 - (i) Proximity of sampling locations to the site;
 - (ii) Similar geologic origins as the site sediment;
 - (iii) Similar fate and transport and biological activities as the site; and
 - (iv) Chemical similarity with the site.
- (6) **Point of compliance.** The point of compliance shall be established at a location that is protective of both aquatic life and human health. To protect aquatic life, the point of compliance shall be established within the biologically active zone. If that location is not sufficient to protect human health, then the point of compliance shall be established at a different location that is also protective of human health.
- (7) **Compliance monitoring.**
 - (a) **General.** The methods used to determine compliance with sediment cleanup standards shall be determined by the department on a site-specific basis.
 - (b) **Use of tissue analysis.** At the department's discretion, and when determined to provide appropriate protection for human health or the environment, contaminants in tissue may be used to identify and screen chemicals of concern in sediment during the remedial investigation/feasibility study and to evaluate compliance with sediment cleanup standards.
 - (i) **Risk assessment requirements.** Assessments of risk to human health or the environment from tissue chemical concentrations must be consistent with the procedures of WAC 173-204-560, 173-204-561, and 173-204-564.
 - (ii) **Species and tissue type selection.** The methods and procedures used to select the appropriate species and tissue types shall be determined by the department on a site-specific basis.
 - (c) **Monitoring approaches.** For sediment cleanup standards based on the benthic criteria in WAC 173-204-562 or 173-204-563, as applicable, the department will determine compliance on an individual station by station approach. For sediment cleanup standards based on other criteria, the department will determine compliance by area weighted or other averaging approach, individual station by station approach, or a combination of both. The department will determine the most appropriate monitoring approach based on exposure pathways and receptors.
- (8) **Data reporting.** Any person who samples sediment and/or tissue to assess compliance with this part shall comply with the following conditions:
 - (a) Where analytical results indicate a chemical is not detected in a sample, the data shall be reported as "non detect" at the method detection limit and the method detection

Sediment Management Standards

WAC 173-204-560

limit reported; and

- (b) Where analytical results indicate a chemical is detected between the method detection limit and the practical quantitation limit in a sample, the data shall be reported and qualified as "estimated."

[Statutory Authority: Chapter 70.105D RCW. 13-06-014 (Order 08-07), amended and recodified as § 173-204-560, filed 2/25/13, effective 9/1/13. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-570, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards

WAC 173-204-561

WAC 173-204-561 Sediment cleanup levels based on protection of human health.

- (1) Applicability.** This section defines sediment cleanup objectives and cleanup screening levels for contaminants based on protection of human health. They are used to:

 - (a)** Identify and assess the hazard of sites under WAC 173-204-510 and 173-204-520; and
 - (b)** Establish sediment cleanup levels for sites and sediment cleanup units under WAC 173-204-560.
- (2) Sediment cleanup objectives.** Sediment cleanup objectives based on protection of human health shall be calculated using the following:

 - (a) Target risk levels.** Sediment cleanup objectives based on protection of human health shall be at least as protective as the following sediment concentrations:

 - (i) Noncarcinogens.** For noncarcinogens, sediment concentrations that are estimated to result in no acute or chronic toxic effects to human health as determined using a hazard quotient of one. If there are multiple noncarcinogens and/or exposure pathways at the site and the hazard index for the site exceeds one, then the sediment cleanup objectives shall be adjusted downward in accordance with WAC 173-340-708 or other methods approved by the department; and
 - (ii) Carcinogens.** For known or suspected carcinogens, sediment concentrations for which the upper bound on the estimated lifetime excess cancer risk for individual carcinogens is less than or equal to one in one million (1×10^{-6}). If there are multiple carcinogens and/or exposure pathways at the site and the total lifetime excess cancer risk for the site exceeds one in one hundred thousand (1×10^{-5}), then the sediment cleanup objectives shall be adjusted downward in accordance with WAC 173-340-708 or other methods approved by the department;
 - (b) Reasonable maximum exposure.** Sediment cleanup objectives and cleanup screening levels for contaminants based on protection of human health shall be calculated using reasonable maximum exposure scenarios that reflect the highest exposure that is reasonably expected to occur under current and potential future site use conditions;

 - (i) Default scenario.** Except as provided under (b)(ii) of this subsection, the reasonable maximum exposure scenario for a site shall be tribal consumption of fish and shellfish. The department shall consider, as appropriate, the following information on a site-specific basis when selecting or approving the exposure parameters used to represent the reasonable maximum exposure scenario:

 - (A)** Historic, current, and potential future tribal use of fish and shellfish from the general vicinity of the site;
 - (B)** Relevant studies and best available science related to fish consumption rates;
 - (C)** The total fish and shellfish in an individual's diet that is obtained, or has

Sediment Management Standards

WAC 173-204-561

the potential to be obtained, from the general vicinity of the site. This value depends on the ability of the aquatic habitat within the general vicinity of the site to support a department approved fish and shellfish consumption rate under current and potential future site use conditions;

- (D) The fish and shellfish contaminant body burden acquired, or potentially acquired, from the general vicinity of the site; and
 - (E) Other information determined by the department to be relevant;
 - (ii) **Site-specific scenario.** The department may approve an alternate reasonable maximum exposure scenario for the site in accordance with WAC 173-340-708 (3) and (10) and 173-340-702 (14) through (16);
 - (c) **Toxicity parameters.** For toxicological parameters, values established by the United States Environmental Protection Agency (USEPA) and available through the Integrated Risk Information System (IRIS) data base shall be used. If the value for a toxicological parameter is not available through IRIS, other sources shall be used. When evaluating the appropriateness of using other sources, the department may use the hierarchy in the following document: USEPA, Office of Solid Waste and Emergency Response, Directive 9285.7-53, "Human Health Toxicity Values in Superfund Risk Assessments."
- (3) **Cleanup screening levels.**
- (a) **General.** Cleanup screening levels based on protection of human health shall be calculated using the factors in (b) of this subsection and in subsection (2)(b) through (c) of this section.
 - (b) **Target risk levels.** Cleanup screening levels based on protection of human health shall be at least as protective as the following sediment concentrations:
 - (i) **Noncarcinogens.** For noncarcinogens, sediment concentrations that are estimated to result in no acute or chronic toxic effects to human health as determined using a hazard quotient of one. If there are multiple noncarcinogens and/or exposure pathways at the site and the hazard index for the site exceeds one, then the cleanup screening levels shall be adjusted downward in accordance with WAC 173-340-708 or other methods approved by the department; and
 - (ii) **Carcinogens.** For known or suspected carcinogens, sediment concentrations for which the upper bound on the estimated lifetime excess cancer risk for individual carcinogens is less than or equal to one in one hundred thousand (1×10^{-5}). If there are multiple carcinogens and/or exposure pathways at the site and the total lifetime excess cancer risk for the site exceeds one in one hundred thousand (1×10^{-5}), then the cleanup screening levels shall be adjusted downward in accordance with WAC 173-340-708 or other methods approved by the department.

[Statutory Authority: Chapter 70.105D RCW. 13-06-014 (Order 08-07), § 173-204-561, filed 2/25/13, effective 9/1/13.]

Sediment Management Standards

WAC 173-204-562

WAC 173-204-562 Sediment cleanup levels based on protection of the benthic community in marine and low salinity sediment.

- (1) **Applicability.** This section defines sediment cleanup objectives and cleanup screening levels for contaminants based on protection of the benthic community in marine and low salinity sediment. They are used to:
 - (a) Identify and assess the hazard of sites under WAC 173-204-510 and 173-204-520;
 - (b) Establish sediment cleanup levels for sites and sediment cleanup units under WAC 173-204-560.
- (2) **Marine sediment - Chemical criteria.** The chemical concentration criteria in Table III establish the sediment cleanup objectives and cleanup screening levels chemical criteria for marine sediment. The criteria of this section shall apply to marine sediments for toxicity to the benthic community.
 - (a) The sediment cleanup objectives of this section establish a no adverse effects level, including no acute or chronic adverse effects, to the benthic community. Chemical concentrations at or below the sediment cleanup objectives correspond to sediment quality that results in no adverse effects to the benthic community.
 - (b) The cleanup screening levels of this section establish a minor adverse effects level, including acute or chronic effects, to the benthic community. Chemical concentrations at or below the cleanup screening level but greater than the sediment cleanup objective correspond to sediment quality that results in minor adverse effects to the benthic community. The marine chemical and biological cleanup screening levels establish minor adverse effects as the level above which station clusters of potential concern are defined and may be defined as potential cleanup sites for benthic community toxicity, and at or below which station clusters of low concern are defined, per the procedures identified in WAC 173-204-510 and 173-204-520.
 - (c) The cleanup screening level chemical criteria is exceeded when the sediment chemical concentration for an individual chemical is above the cleanup screening level in Table III.
 - (d) The sediment cleanup objective chemical criteria is exceeded when the sediment chemical concentration for one or more chemicals is above the sediment cleanup objective in Table III.
 - (e) Low salinity sediment cleanup screening levels criteria. Reserved: The department shall determine on a case-by-case basis the criteria, methods, and procedures necessary to meet the intent of this part.
 - (f) For purposes of this section, where chemical analyses indicates a chemical is not detected in a sample, the method detection limit and the practical quantitation limit shall be reported and shall be at or below the sediment cleanup objectives chemical criteria in Table III.
 - (g) Where chemical criteria in Table III represent the sum of individual compounds or isomers, the following methods shall be applied:
 - (i) Where chemical analyses identify an undetected value for every individual

Sediment Management Standards

WAC 173-204-562

compound/isomer, then the single highest detection limit shall represent the sum of the respective compounds/isomers; and

- (ii) Where chemical analyses detect one or more individual compound/isomers, only the detected concentrations will be added to represent the group sum.
- (h) For some chemical criteria in Table III, the listed criteria represent concentrations in parts per million "normalized" or expressed on a total organic carbon basis. To normalize to total organic carbon, the dry weight concentration for each parameter is divided by the decimal fraction representing the percent total organic carbon content (e.g., 0.01 means 1 percent) of the sediment per the equation: $\text{ppm OC} = (\text{ppb dry weight}) / (\text{percent total organic carbon} \times 1000)$.
- (i) The LPAH criterion in Table III represents the sum of the following "low molecular weight polycyclic aromatic hydrocarbon" compounds: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, and Anthracene. The LPAH criterion is not the sum of the criteria values for the individual LPAH compounds as listed.
- (j) The HPAH criterion in Table III represents the sum of the following "high molecular weight polycyclic aromatic hydrocarbon" compounds: Fluoranthene, Pyrene, Benz(a)anthracene, Chrysene, Total Benzo(a)fluoranthenes, Benzo(a)pyrene, Indeno(1,2,3-c,d)pyrene, Dibenzo(a,h)anthracene, and Benzo(g,h,i)perylene. The HPAH criterion is not the sum of the criteria values for the individual HPAH compounds as listed.
- (k) The total benzo(a)fluoranthenes criterion in Table III represents the sum of the concentrations of the "B," "J," and "K" isomers.

Sediment Management Standards

WAC 173-204-562

Table III
Marine Sediment Cleanup Objectives and Cleanup Screening Levels Chemical Criteria

Chemical Parameter	mg/kg Dry Weight (Parts per Million (ppm) Dry Weight)	mg/kg Dry Weight (Parts per Million (ppm) Dry Weight)
	Sediment Cleanup Objective	Cleanup Screening Level
Arsenic	57	93
Cadmium	5.1	6.7
Chromium	260	270
Copper	390	390
Lead	450	530
Mercury	0.41	0.59
Silver	6.1	6.1
Zinc	410	960

Chemical Parameter	mg/kg Organic Carbon (ppm carbon)	mg/kg Organic Carbon (ppm carbon)
	Sediment Cleanup Objective	Cleanup Screening Level
LPAH	370	780
Naphthalene	99	170
Acenaphthylene	66	66
Acenaphthene	16	57
Fluorene	23	79
Phenanthrene	100	480
Anthracene	220	1200
2-Methylnaphthalene	38	64
HPAH	960	5300
Fluoranthene	160	1200
Pyrene	1000	1400
Benz(a)anthracene	110	270
Chrysene	110	460
Total Benzo(a)fluoranthenes	230	450
Benzo(a)pyrene	99	210
Indeno(1,2,3 c,d)pyrene	34	88
Dibenzo(a,h)anthracene	12	33
Benzo(g,h,i)perylene	31	78
1,2 Dichlorobenzene	2.3	2.3
1,4 Dichlorobenzene	3.1	9
1,2,4 Trichlorobenzene	0.81	1.8
Hexachlorobenzene	0.38	2.3
Dimethyl phthalate	53	53
Diethyl phthalate	61	110
Di-n-butyl phthalate	220	1700
Butyl benzyl phthalate	4.9	64
Bis (2-ethylhexyl) phthalate	47	78
Di-n-octyl phthalate	58	4500
Dibenzofuran	15	58
Hexachlorobutadiene	3.9	6.2
N-Nitrosodiphenylamine	11	11
Total PCBs	12	65

Adoption Date: February 22, 2013

Page 99

Sediment Management Standards

WAC 173-204-562

Chemical Parameter	ug/kg Dry Weight (Parts per Billion (ppb) Dry Weight)	ug/kg Dry Weight (Parts per Billion (ppb) Dry Weight)
Phenol	420	1200
2-Methylphenol	63	63
4-Methylphenol	670	670
2,4 Dimethylphenol	29	29
Pentachlorophenol	360	690
Benzyl Alcohol	57	73
Benzoic Acid	650	650

- (3) **Marine sediment - Biological criteria.** The biological effects criteria in Table IV establish the marine sediment cleanup objectives and cleanup screening levels. The criteria of this section shall apply to marine sediments for toxicity to the benthic invertebrate community.
- (a) The sediment cleanup objectives of this section establish a no adverse effects level, including acute or chronic adverse effects, to the benthic community. The sediment cleanup objective biological criteria for a sampling station is exceeded when one of the biological test results is above the sediment cleanup objective as described in Table IV.
 - (b) The cleanup screening levels of this section establish a minor adverse effects level, including acute or chronic adverse effects, to the benthic community. The cleanup screening level biological criteria for a sampling station is exceeded when:
 - (i) Any two of the biological test results for a sampling station exceed the sediment cleanup objective in Table IV; or
 - (ii) One of the biological test results for a sampling station exceeds the cleanup screening level in Table IV.
 - (c) The acute and chronic effects biological tests of Table V shall be used to:
 - (i) Confirm designation of marine sediments for benthic community toxicity. The department may require, or any person may perform, biological testing to confirm the designation of marine sediment which either passes or fails the chemical criteria established in subsection (2) of this section. If required, the sediment shall be tested using the procedures in (d) of this subsection; and
 - (ii) Establish the marine sediment cleanup objective and cleanup screening level for identifying sediment station clusters of potential concern for benthic community toxicity using the procedures of WAC 173-204-510(2); and
 - (iii) Establish the marine sediment cleanup objective or cleanup screening level for identifying station clusters of low concern using the procedures of WAC 173-204-510(2).
 - (d) To designate sediment quality using biological criteria, a minimum of the following shall be included in the suite of biological tests for each sediment sample as described in Table V:

Sediment Management Standards

WAC 173-204-562

- (i) Two acute effects tests; and
 - (ii) One chronic test.
 - (e) The appropriate control and reference sediment samples shall meet the performance standards described in Table IV. Selection and use of reference sediment must be approved by the department. The department may approve a different performance standard based on latest scientific knowledge.
 - (f) Use of alternate biological tests may be required by the department and shall be subject to the review and approval of the department under WAC 173-204-130(4).
 - (g) Any person who designates test sediments using the procedures of this section shall meet the sampling and testing plan requirements of WAC 173-204-600 and records management requirements of WAC 173-204-610. Test sediments designated using the procedures of this section shall be sampled and analyzed using methods approved by the department, and shall use an appropriate quality assurance/quality control program, as determined by the department.
- (4) **Marine sediment - Other toxic, radioactive, biological, or deleterious substances criteria.** "Other toxic, radioactive, biological, or deleterious substances" means substances not specified in Table III, that are in, or on, sediments. They shall be at or below levels which cause minor adverse effects in marine biological resources. The department shall determine on a case-by-case basis other criteria, methods, and procedures, such as using the biological criteria of subsection (3)(a) through (g) of this section, necessary to meet the intent of this part.

Sediment Management Standards

WAC 173-204-562

Table IV

Marine Sediment Cleanup Objectives and Cleanup Screening Levels Biological Criteria

Biological Test/Endpoint	Performance Standard Control	Performance Standard Reference	Sediment Cleanup Objective for each biological test	Cleanup Screening Level for each biological test
Amphipod				
10-day Mortality	$M_C \leq 10\%$	$M_R \leq 25\%$	$M_T > 25\%$ Absolute and M_T vs M_R SD ($p \leq 0.05$)	$M_T - M_R \geq 30\%$ and M_T vs M_R SD ($p \leq 0.05$)
Larval				
Bivalve or Echinoderm Abnormality/Mortality	$N_C / I \geq 0.70$	$N_R / N_C \geq 0.65$	$(N_R - N_T) / N_C > 0.15$ and N_T / N_C vs N_R / N_C SD ($p \leq 0.10$)	$(N_R - N_T) / N_C > 0.30$ and N_T / N_C vs N_R / N_C SD ($p \leq 0.10$)
Juvenile Polychaete				
<i>Neanthes</i> 20-day Growth	$M_C < 10\%$ and $MIG_C > 0.72$ mg/individual/day (or case-by-case)	$MIG_R / MIG_C > 0.80$	$MIG_T / MIG_R < 0.70$ and MIG_T vs MIG_R SD ($p \leq 0.05$)	$MIG_T / MIG_R < 0.50$ and MIG_T vs MIG_R SD ($p \leq 0.05$)
Microtox				
Microtox Decreased Luminescence	case-by-case	case-by-case	$ML_T / ML_R < 0.80$ and ML_T vs ML_R SD ($p = 0.05$)	
Benthic Abundance				
Benthic Abundance	See Table IV legend		$A_T / A_R < 0.50$ For any one of three major taxa Class Crustacea, Phylum Mollusca or Class Polychaeta	$A_T / A_R < 0.50$ For any two of three major taxa Class Crustacea, Phylum Mollusca or Class Polychaeta

Sediment Management Standards

WAC 173-204-562

Table IV Explanatory Notes:

A = Abundance;

AFDW = Ash free dry weight;

C = Control;

R = Reference;

T = Test;

I = Initial count;

M = Mortality;

N = Normal survivorship expressed as actual counts;

MIG = Mean individual growth rate expressed in mg/ind/day AFDW;

ML = Mean light output;

SD = Statistically significant difference;

An exceedance of the criteria requires a statistically significant difference at $p \leq 0.05$ for Amphipod, Juvenile Polychaete, Microtox tests;

An exceedance of the criteria requires a statistically significant difference at $p \leq 0.10$ for the Larval tests.

Benthic Abundance: The reference benthic macroinvertebrate assemblage should be representative of areas removed from significant sources of contaminants and, to the extent possible, have the following characteristics:

- (1) The taxonomic richness of benthic macroinvertebrates and the abundances of higher taxonomic groups that reflect seasonality and natural, physical, and chemical conditions (e.g., grain size composition, salinity of sediments, water depth) in a reference area and not be obviously depressed as a result of chemical toxicity;
- (2) Normally abundant species that are known to be sensitive to chemical contaminants are present;
- (3) Normally rare species that are known to become abundant only under chemically disturbed conditions are rare or absent; and
- (4) The abundances of normally rare species that control benthic community structure through physical modification of the sediment are similar to those observed at the test sediment site.

Sediment Management Standards

WAC 173-204-562

Table V

Types of Marine Sediment Biological Tests, Species, and Applicable Endpoints.

Species/Class, biological test, and endpoint	Acute effects biological test	Chronic effects biological test
Amphipod: <i>Rhepoxynius abronius</i> , <i>Ampelisca abdita</i> , <i>Eohaustorius estuarius</i>		
10-day Mortality	X	
Larval: <i>Crassostrea gigas</i> (Pacific oyster), <i>Mytilus (edulis) galloprovincialis</i> (Blue mussel), <i>Strongylocentrotus purpuratus</i> (Purple sea urchin), <i>Dendraster excentricus</i> (Sand dollar)		
Mortality/Abnormality	X	
Juvenile Polychaete:		
<i>Neanthes arenaceodentata</i>		
20-day Growth		X
Microtox: <i>Vibrio fischeri</i>		
15-minute exposure; Decreased luminescence		X
Benthic Infauna: Class Crustacea, Polychaeta. Phylum Mollusca		X

- (5) **Low salinity sediment cleanup screening levels criteria.** Reserved: The department shall determine on a case-by-case basis the criteria, methods, and procedures necessary to meet the intent of this part.

[Statutory Authority: Chapter 70.105D RCW. 13-06-014 (Order 08-07), amended and recodified as § 173-204-562, filed 2/25/13, effective 9/1/13. Statutory Authority: RCW 90.48.220, 96-02-058, § 173-204-520, filed 12/29/95, effective 1/29/96. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-520, filed 3/27/91, effective 4/27/91.]

Adoption Date: February 22, 2013

Page 104

Sediment Management Standards

WAC 173-204-563

WAC 173-204-563 Sediment cleanup levels based on protection of the benthic community in freshwater sediment.

- (1) **Applicability.** This section defines sediment cleanup objectives and cleanup screening levels for contaminants based on protection of the benthic community in freshwater sediment. They are used to:

 - (a) Identify and assess the hazard of sites under WAC 173-204-510 and 173-204-520; and
 - (b) Establish sediment cleanup levels for sites and sediment cleanup units under WAC 173-204-560.
- (2) **Freshwater sediment - Chemical criteria.** The chemical concentration criteria in Table VI establish the sediment cleanup objectives and cleanup screening levels chemical criteria for freshwater sediment. The criteria of this section shall apply to freshwater sediments for toxicity to the benthic community.

 - (a) The sediment cleanup objectives of this section establish a no adverse effects level, including no acute or chronic adverse effects, to the benthic community. Chemical concentrations at or below the sediment cleanup objectives correspond to sediment quality that results in no adverse effects to the benthic community.
 - (b) The cleanup screening levels of this section establish a minor adverse effects level, including acute or chronic effects, to the benthic community. Chemical concentrations at or below the cleanup screening level but greater than the sediment cleanup objective correspond to sediment quality that results in minor adverse effects to the benthic community. The freshwater chemical and biological cleanup screening levels establish minor adverse effects as the level above which station clusters of potential concern are defined and may be defined as potential cleanup sites for benthic community toxicity, and at or below which station clusters of low concern are defined, per the procedures identified in WAC 173-204-510 and 173-204-520.
 - (c) The cleanup screening level chemical criteria is exceeded when the sediment chemical concentration for an individual chemical is above the cleanup screening level in Table VI.
 - (d) The sediment cleanup objective chemical criteria is exceeded when the sediment chemical concentration for an individual chemical is above the sediment cleanup objective in Table VI.
 - (e) For purposes of this section, where chemical analyses indicate a chemical is not detected in a sediment sample, the method detection limit and the practical quantitation limit shall be reported and shall be at or below the freshwater sediment cleanup objectives chemical criteria value in Table VI.
 - (f) Where chemical criteria in Table VI represent the sum of individual compounds or isomers, the following methods shall be applied:

 - (i) Where chemical analyses identify an undetected value for every individual compound/isomer, then the single highest detection limit shall represent the sum of the respective compounds/isomers; and

Sediment Management Standards

WAC 173-204-563

- (ii) Where chemical analyses detect one or more individual compound/isomers, only the detected concentrations will be added to represent the group sum.
- (g) The chemical criteria in Table VI represent concentrations as dry weight.
- (h) The total polycyclic aromatic hydrocarbon (PAH) criterion in Table VI represents the sum of the following polycyclic aromatic hydrocarbon compounds: 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benz(a)anthracene, benzo(a)pyrene, benzo(ghi)perylene, chrysene, dibenz(ah)anthracene, fluoranthene, fluorene, indeno(123-cd)pyrene, naphthalene, phenanthrene, pyrene, total benzo(a)fluoranthenes (b+k+j).
- (i) The total benzo(a)fluoranthenes criterion in Table VI represents the sum of the concentrations of the "B," "J," and "K" isomers.
- (j) The total dichlorodiphenyldichloroethane (DDD) criterion in Table VI represents the sum of the following DDD isomers: o,p'-DDD and p,p'-DDD.
- (k) The total dichlorodiphenyldichloroethylene (DDE) criterion in Table VI represents the sum of the following DDE isomers: o,p'-DDE and p,p'-DDE.
- (l) The total dichlorodiphenyltrichloroethane (DDT) criterion in Table VI represents the sum of the following DDT isomers: o,p'-DDT, p,p'-DDT.
- (m) The total polychlorinated biphenyl (PCB) Aroclors criterion in Table VI represents the sum of the following Aroclors: 1016, 1221, 1242, 1248, 1254, 1260, 1268.
- (n) When the listed chemical criteria in Table VI have a ">" (greater than) value for the cleanup screening level, the cleanup screening level is unknown but is above the concentration shown. If test results show concentrations above this cleanup screening level, bioassays shall be conducted to evaluate potential benthic community toxicity.
- (o) The department recognizes that, in the following types of freshwater sediment environments, the chemical criteria in Table VI may not reliably predict benthic community toxicity:
 - (i) Sediment with unusual geochemical or biochemical characteristics influencing toxicity (release or bioavailability of contaminants) including total organic carbon in environments such as bogs and alpine wetlands;
 - (ii) Sediment with pore water or overlying water that has unusual geochemical or biochemical characteristics influencing toxicity (release or bioavailability of contaminants) including pH or hardness;
 - (iii) Sediment impacted by metals mining, metals milling, or metals smelting; and
 - (iv) Sediment impacted by other toxic, radioactive, biological, or deleterious substances as specified in subsection (4) of this section.
- (p) At a site where the freshwater sediment environment meets the categories specified in (o)(i) or (ii) of this subsection, the department may require alternative methods for characterizing benthic community toxicity. At a site where the freshwater sediment environment meets the categories specified in (o)(iii) or (iv) of this subsection, an alternative method for characterizing benthic community toxicity shall be required.

Sediment Management Standards

WAC 173-204-563

The alternative method used shall be the biological criteria of subsection (3)(a) through (h) of this section, unless the department determines one of the following methods are consistent with the provisions in subsection (3)(a) through (h) of this section:

- (i) Establishing site-specific chemical criteria using site chemistry and the biological criteria of subsection (3)(a) through (h) of this section;
- (ii) Other biological methods approved by the department; or
- (iii) Other approaches in accordance with WAC 173-204-130.

Sediment Management Standards

WAC 173-204-563

Table VI

Freshwater Sediment Cleanup Objectives and Cleanup Screening Levels Chemical Criteria

Chemical Parameter	Dry Weight Sediment Cleanup Objective	Dry Weight Cleanup Screening Level
Conventional chemicals (mg/kg)		
Ammonia	230	300
Total sulfides	39	61
Metals (mg/kg)		
Arsenic	14	120
Cadmium	2.1	5.4
Chromium	72	88
Copper	400	1200
Lead	360	> 1300
Mercury	0.66	0.8
Nickel	26	110
Selenium	11	> 20
Silver	0.57	1.7
Zinc	3200	> 4200
Organic chemicals (µg/kg)		
4-Methylphenol	260	2000
Benzoic acid	2900	3800
Beta-Hexachlorocyclohexane	7.2	11
Bis(2-ethylhexyl) phthalate	500	22000
Carbazole	900	1100
Dibenzofuran	200	680
Dibutyltin	910	130000
Dieldrin	4.9	9.3
Di-n-butyl phthalate	380	1000
Di-n-octyl phthalate	39	> 1100
Endrin Ketone	8.5	> 8.5
Monobutyltin	540	> 4800
Pentachlorophenol	1200	> 1200
Phenol	120	210
Tetrabutyltin	97	> 97
Total PCB Aroclors	110	2500
Total DDDs	310	860
Total DDEs	21	33
Total DDTs	100	8100
Total PAHs	17000	30000
Tributyltin	47	320
Bulk Petroleum Hydrocarbons (mg/kg)		
Total Petroleum Hydrocarbon (TPH) -Diesel	340	510
Total Petroleum Hydrocarbon (TPH) - Residual	3600	4400

Adoption Date: February 22, 2013

Page 108

Sediment Management Standards

WAC 173-204-563

- (3) **Freshwater sediment - Biological criteria.** The biological effects criteria in Table VII establish the sediment cleanup objectives and cleanup screening levels biological criteria for freshwater sediment. The criteria of this section shall apply to freshwater sediments for toxicity to the benthic invertebrate community.
- (a) The sediment cleanup objectives of this section establish a no adverse effects level, including no acute or chronic adverse effects, to the benthic community. The sediment cleanup objective biological criteria for a sampling station is exceeded when one of the biological test results is above the sediment cleanup objective as described in Table VII.
 - (b) The cleanup screening levels of this section establish a minor adverse effects level, including acute or chronic effects, to the benthic community. The cleanup screening level biological criteria for a sampling station is exceeded when:
 - (i) Any two of the biological test results for a sampling station are above the sediment cleanup objective in Table VII; or
 - (ii) One of the biological test results for a sampling station is above the cleanup screening level as described in Table VII.
 - (c) The acute and chronic effects biological tests of Table VIII shall be used to:
 - (i) Confirm designation of freshwater sediment for benthic toxicity. The department may require, or any person may perform, biological testing to confirm the designation of freshwater sediment which either passes or fails the chemical criteria in subsection (2) of this section. The sediment shall be tested using the procedures in (d) of this subsection;
 - (ii) Evaluate the freshwater sediment cleanup objective and cleanup screening level for identifying sediment station clusters of potential concern for benthic community toxicity using the procedures in WAC 173-204-510(2); and
 - (iii) Establish the freshwater sediment cleanup objective or cleanup screening level for identifying station clusters of low concern for benthic community toxicity using the procedures in WAC 173-204-510(2).
 - (d) To designate sediment quality using biological criteria, a minimum of the following shall be included in the suite of biological tests for each sediment sample as described in Table VIII:
 - (i) Two different species;
 - (ii) Three endpoints;
 - (iii) One chronic test; and
 - (iv) One sublethal endpoint.
 - (e) The appropriate control and reference sediment samples shall meet the performance standards described in Table VII. Selection and use of reference sediment must be approved by the department and shall meet the performance standards of Table VII. The department may approve a different performance standard based on latest scientific knowledge.

Adoption Date: February 22, 2013

Page 109

Sediment Management Standards

WAC 173-204-563

- (f) When sediment is collected to conduct the biological tests in Table VIII or other biological tests approved by the department, the overlying site water shall be collected and analyzed for pH, hardness, and temperature.
 - (g) Use of alternate biological tests may be required by the department and shall be subject to the review and approval of the department using the procedures of WAC 173-204-130(4).
 - (h) Any person who designates test sediments using the procedures of this section shall meet the sampling and testing plan requirements of WAC 173-204-600 and records management requirements of WAC 173-204-610. Test sediments designated using the procedures of this section shall be sampled and analyzed using methods approved by the department, and shall use an appropriate quality assurance/quality control program, as determined by the department.
- (4) **Freshwater sediment - Other toxic, radioactive, biological, or deleterious substances criteria.** "Other toxic, radioactive, biological, or deleterious substances" means substances not specified in Table VI that are in, or on, sediments and cause minor adverse effects to biological resources, as determined in subsection (3) of this section. The department shall determine on a case-by-case basis other criteria, methods, and procedures, such as those listed in subsection (2)(p) of this section, necessary to meet the criteria in subsection (3) of this section.

Sediment Management Standards

WAC 173-204-563

Table VII
Freshwater Sediment Cleanup Objectives and Cleanup Screening Levels Biological Criteria

Biological Test/ Endpoint*	Performance Standard*		Sediment Cleanup Objective for each biological test	Cleanup Screening Level for each biological test
	Control*	Reference		
<i>Hyalella azteca</i>				
10-day mortality	$M_C \leq 20\%$	$M_R \leq 25\%$	$M_T - M_C > 15\%$ and M_T vs M_C SD ($p \leq 0.05$)	$M_T - M_C > 25\%$ and M_T vs M_C SD ($p \leq 0.05$)
28-day mortality	$M_C \leq 20\%$	$M_R \leq 30\%$	$M_T - M_C > 10\%$ and M_T vs M_C SD ($p \leq 0.05$)	$M_T - M_C > 25\%$ and M_T vs M_C SD ($p \leq 0.05$)
28-day growth	$MIG_C \geq 0.15$ mg/individual	$MIG_R \geq 0.15$ mg/individual	($MIG_C - MIG_T$)/ $MIG_C > 0.25$ and MIG_T vs MIG_C SD ($p \leq 0.05$)	($MIG_C - MIG_T$)/ $MIG_C > 0.40$ and MIG_T vs MIG_C SD ($p \leq 0.05$)
<i>Chironomus dilutus</i>				
10-day mortality	$M_C \leq 30\%$	$M_R \leq 30\%$	$M_T - M_C > 20\%$ and M_T vs M_C SD ($p \leq 0.05$)	$M_T - M_C > 30\%$ and M_T vs M_C SD ($p \leq 0.05$)
10-day growth	$MIG_C \geq 0.48$ mg/individual	$MIG_R/MIG_C \geq 0.8$	($MIG_C - MIG_T$)/ $MIG_C > 0.20$ and MIG_T vs MIG_C SD ($p \leq 0.05$)	($MIG_C - MIG_T$)/ $MIG_C > 0.30$ and MIG_T vs MIG_C SD ($p \leq 0.05$)
20-day mortality	$M_C \leq 32\%$	$M_R \leq 35\%$	$M_T - M_C > 15\%$ and M_T vs M_C SD ($p \leq 0.05$)	$M_T - M_C > 25\%$ and M_T vs M_C SD ($p \leq 0.05$)
20-day growth	$MIG_C > 0.60$ mg/individual	$MIG_R/MIG_C \geq 0.8$	($MIG_C - MIG_T$)/ $MIG_C > 0.25$ and MIG_T vs MIG_C SD ($p \leq 0.05$)	($MIG_C - MIG_T$)/ $MIG_C > 0.40$ and MIG_T vs MIG_C SD ($p \leq 0.05$)

Adoption Date: February 22, 2013

Page 111

Sediment Management Standards

WAC 173-204-563

Table VII Explanatory Notes:

C = Control;

MIG = Mean individual growth at time final;

SD = Statistically significant difference;

R = Reference;

T= Test.

An exceedance of the sediment cleanup objective and cleanup screening level requires a statistically significant difference at $p \leq 0.05$. Reference performance standards are provided for sites where the department has approved a freshwater reference sediment site(s) and reference results will be substituted for control in comparing test sediments to criteria.

*The department shall use the most updated American Society for Testing and Materials and EPA protocols and performance standards.

Sediment Management Standards

WAC 173-204-563

Table VIII
Types of Freshwater Sediment Biological Tests, Species, and Applicable Endpoints

Species, Biological Test, and Endpoint	Acute Effects Biological Test	Chronic Effects Biological Test	Lethal Effects Biological Test	Sublethal Effects Biological Test
Amphipod <i>Hyalella azteca</i>				
10-day Mortality	x		x	
28-day Mortality		x	x	
28-day Growth		x		x
Midge <i>Chironomus dilutus</i>				
10-day Mortality	x		x	
10-day Growth	x			x
20-day Mortality		x	x	
20-day Growth		x		x

Table VIII Explanatory Notes:

The department shall use the most current American Society for Testing and Materials and EPA protocols for establishing appropriate biological tests.

[Statutory Authority: Chapter 70.105D RCW. 13-06-014 (Order 08-07), § 173-204-563, filed 2/25/13, effective 9/1/13.]

Sediment Management Standards

WAC 173-204-563

This page intentionally blank.

Adoption Date: February 22, 2013

Page 114

Sediment Management Standards

WAC 173-204-564

WAC 173-204-564 Sediment cleanup levels based on protection of higher trophic level species.

- (1) **Applicability.** This section defines sediment cleanup objectives and cleanup screening levels for contaminants based on protection of species at trophic levels not addressed in WAC 173-204-562 and 173-204-563 (hereafter called "higher trophic level species"). They are used to establish sediment cleanup levels for sites and sediment cleanup units under WAC 173-204-560.
- (2) **Requirements.** Sediment cleanup objectives and cleanup screening levels based on protection of higher trophic level species shall be established at concentrations that have no adverse effects. To establish such concentrations, a site-specific ecological risk assessment meeting the requirements of this subsection must be performed.
 - (a) **Approval by the department.** Prior to performing the assessment, the department must approve the criteria, methods, and procedures to be used in the assessment.
 - (b) **Species evaluated.** The assessment must evaluate higher trophic level species that currently utilize, may potentially inhabit, or have historically inhabited the site.
 - (c) **Factors considered.** The assessment must consider factors such as:
 - (i) Effects that impair the higher trophic level species reproduction, growth, or survival;
 - (ii) The species life history, feeding and reproductive strategy, population numbers, home range, and the potential for recruitment or immigration of individuals to the site; and
 - (iii) The potential for the contaminant to bioaccumulate or biomagnify through the food chain. A contaminant will be presumed to have this potential if any of the following conditions are met:
 - (A) The contaminant is listed as a persistent, bioaccumulative, or toxic (PBT) contaminant on the department's PBT list in WAC 173-333-310; or
 - (B) The log of the contaminant's octanol-water partitioning coefficient is greater than 3.5 ($\log K_{ow} > 3.5$);
 - (iv) Whether contaminants are present at the site at concentrations that are known or suspected to cause adverse or minor adverse effects on higher trophic level species.
 - (d) **Coordination.** Coordination with the appropriate state and federal agencies should be conducted if species protected under the federal Endangered Species Act (16 U.S.C. 1531 et seq.), Title 77 or 79 RCW are present at the site or the site is within the critical habitat of a protected species.

[Statutory Authority: Chapter 70.105D RCW. 13-06-014 (Order 08-07), § 173-204-564, filed 2/25/13, effective 9/1/13.]

Sediment Management Standards

WAC 173-204-564

This page intentionally blank.

Adoption Date: February 22, 2013

Page 116

Sediment Management Standards

WAC 173-204-570

WAC 173-204-570 Selection of cleanup actions.

- (1) **Purpose.** This section establishes the minimum requirements and criteria for selecting sediment cleanup actions under chapter 70.105D RCW. This section applies both to sediment-only cleanup sites and to the sediment portion of any combined upland and sediment cleanup site.
- (2) **General requirements.** The department shall review and provide written approval of cleanup actions and sediment recovery zones under WAC 173-204-575 prior to implementation of a cleanup action.
- (3) **Minimum requirements for sediment cleanup actions.** The requirements in this subsection and the requirements for establishing sediment cleanup standards under WAC 173-204-560 shall be considered concurrently. All sediment cleanup actions shall meet the following minimum requirements:
 - (a) Protect human health and the environment;
 - (b) Comply with all applicable laws;
 - (c) Comply with the sediment cleanup standards specified in WAC 173-204-560 through 173-204-564;
 - (d) Use permanent solutions to the maximum extent practicable, as specified in subsection (4) of this section;
 - (e) Provide for a reasonable restoration time frame as specified in subsection (5) of this section. Preference shall be given to alternatives with a shorter restoration time frame;
 - (f) Where source control measures are necessary as part of a cleanup action, preference shall be given to alternatives that include source control measures that are more effective in minimizing the accumulation of contaminants in sediment caused by discharges;
 - (g) If a sediment recovery zone is necessary as part of the cleanup action, meet the requirements in WAC 173-204-590;
 - (h) Cleanup actions for a site shall not rely exclusively on monitored natural recovery or institutional controls and monitoring where it is technically possible to implement a more permanent cleanup action. Where institutional controls are used, they must comply with WAC 173-340-440 and the department shall, as appropriate, consider any aquatic state land use classification under chapter 332-30 WAC. Preference shall be given to institutional controls with a demonstrated ability to control exposures and ensure the integrity of the cleanup action;
 - (i) Provide an opportunity for review and comment by affected landowners and the general public, consistent with the public participation plan, and consider concerns identified in these comments;
 - (j) Provide adequate monitoring to ensure the effectiveness of the cleanup action. Preference will be given to alternatives with a greater ability to monitor the effectiveness of the cleanup action; and

Sediment Management Standards

WAC 173-204-570

- (k) Provide for periodic review to determine the effectiveness and protectiveness of cleanup actions that utilize containment, enhanced natural recovery, monitored natural recovery, institutional controls, sediment cleanup levels based on practical quantitation limits, or a sediment recovery zone. When required by this provision, the periodic review shall follow the process and requirements specified in WAC 173-340-420.
- (4) **Using permanent solutions to the maximum extent practicable.**
 - (a) This subsection specifies the requirements for determining whether a cleanup action consists of permanent solutions to the maximum extent practicable, as required under subsection (3)(d) of this section. When making this determination, the process and criteria in WAC 173-340-360(3) shall be used, except as provided in (b) of this subsection.
 - (b) The evaluation of cleanup action alternatives under WAC 173-340-360(3) requires consideration of several criteria. One of those criteria is long-term effectiveness. Cleanup actions may consist of a combination of cleanup action components. When assessing the relative degree of long-term effectiveness of cleanup action components, the following types of components may be used as a guide, in descending order, in place of the components listed in WAC 173-340-360 (3)(f)(iv):
 - (i) Source controls in combination with other cleanup technologies;
 - (ii) Beneficial reuse of the sediments;
 - (iii) Treatment to immobilize, destroy, or detoxify contaminants;
 - (iv) Dredging and disposal in an upland engineered facility that minimizes subsequent releases and exposures to contaminants;
 - (v) Dredging and disposal in a nearshore, in-water, confined aquatic disposal facility;
 - (vi) Containment of contaminated sediments in-place with an engineered cap;
 - (vii) Dredging and disposal at an open water disposal site approved by applicable state and federal agencies;
 - (viii) Enhanced natural recovery;
 - (ix) Monitored natural recovery; and
 - (x) Institutional controls and monitoring.
- (5) **Providing a reasonable restoration time frame.** This subsection specifies the requirements and procedures for determining whether a cleanup action provides for a reasonable restoration time frame, as required under subsection (3)(e) of this section.
 - (a) **Presumption.** Unless otherwise determined by the department, cleanup actions that achieve compliance with the sediment cleanup standards at the site or sediment cleanup unit within ten years of completion of construction of the active components of the cleanup action shall be presumed to have a reasonable restoration time frame.
 - (b) **Relationship to sediment recovery zone.** If the restoration time frame for a cleanup action is longer than ten years after completion of construction of the active

Sediment Management Standards

WAC 173-204-570

components of the cleanup action, then a sediment recovery zone must be established as part of a cleanup action in accordance with WAC 173-204-590.

- (c) **Factors.** When determining whether a cleanup action provides a reasonable restoration time frame, the following factors shall be considered:
- (i) The length of time it will take for the cleanup action to achieve the sediment cleanup standards at the site or sediment cleanup unit. Preference shall be given to alternatives that achieve sediment cleanup standards at the site or sediment cleanup unit sooner;
 - (ii) Potential risks posed by the site or sediment cleanup unit to biological resources and human health;
 - (iii) Practicability of achieving the site or sediment cleanup unit-specific cleanup standards in less than a ten-year period;
 - (iv) Current use of the site or sediment cleanup unit, surrounding areas, and associated resources that are, or may be, affected by residual contamination;
 - (v) The aquatic state land use classification under chapter 332-30 WAC of the lands encompassing the site or sediment cleanup unit;
 - (vi) Potential future use of the site or sediment cleanup unit, surrounding areas, and associated resources that are, or may be, affected by residual contamination;
 - (vii) Likely effectiveness of source control measures to reduce the time to achieve cleanup standards;
 - (viii) Likely effectiveness and reliability of institutional controls;
 - (ix) Degree of, and ability to, control and monitor migration of residual contamination; and
 - (x) The degree to which natural recovery processes are expected to reduce contamination.

[Statutory Authority: Chapter 70.105D RCW. 13-06-014 (Order 08-07), amended and recodified as § 173-204-570, filed 2/25/13, effective 9/1/13. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-580, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards

WAC 173-204-570

This page intentionally blank.

Adoption Date: February 22, 2013

Page 120

Sediment Management Standards

WAC 173-204-575

WAC 173-204-575 Cleanup action decisions.

- (1) **Purpose.** The department shall use the remedial investigation/feasibility study report and other appropriate information to establish sediment cleanup standards and select cleanup actions for a site or sediment cleanup unit. These decisions must be consistent with this part and chapter 70.105D RCW.
- (2) **State cleanup sites.** For sites or sediment cleanup units being cleaned up under the authority of chapter 70.105D RCW, the department shall prepare a cleanup action plan documenting its cleanup decisions. The cleanup action plan shall be prepared consistent with the pertinent requirements and procedures specified in WAC 173-340-380. The decisions in the cleanup action plan shall be incorporated into any enforcement order, agreed order, consent decree, or other binding legal document issued under chapter 70.105D RCW. The public review process for the department's decisions shall comply with the requirements and procedures in chapter 173-340 WAC.
- (3) **Federal cleanup sites.** For sites or sediment cleanup units being cleaned up under the authority of the federal Comprehensive Environmental Response, Compensation and Liability Act (42 U.S.C. Sec. 9601 et seq.), a record of decision, administrative order, consent decree, or other binding legal document issued under the federal cleanup law may be used by the department to meet the requirements of this section provided:
 - (a) The remedial action is consistent with the requirements in this part;
 - (b) The state has concurred with the remedial action; and
 - (c) An opportunity was provided for the public to comment on the remedial action.
- (4) **Other authorities.** For sites or sediment cleanup units being cleaned up under other authorities, the department expects that cleanup decisions will be incorporated into the permit, administrative order, or other appropriate binding legal document. The public review process, and documentation for the department's decisions, shall be consistent with the requirements and procedures for the underlying administrative authority.
- (5) **Public involvement.** The department shall provide public notice and an opportunity for review and comment on its sediment cleanup decisions under this part.
 - (a) Where the underlying administrative authority used to implement the remedial action provides an adequate public notice and comment opportunity prior to implementation of the remedial action, separate public notice and comment is not required under this part.
 - (b) If the underlying administrative authority does not provide adequate public notice and comment opportunity, then the department shall provide for this prior to implementation of the remedial action.
 - (c) Where more than one public notice and comment period is needed to fulfill the requirements of this part and those in other laws, the department may combine public notice and comment periods, hearings, and other public involvement opportunities to streamline the public review process.

[Statutory Authority: Chapter 70.105D RCW. 13-06-014 (Order 08-07), § 173-204-575, filed 2/25/13, effective 9/1/13.]

Sediment Management Standards

WAC 173-204-575

This page intentionally blank.

Adoption Date: February 22, 2013

Page 122

Sediment Management Standards

WAC 173-204-590

WAC 173-204-590 Sediment recovery zones.

- (1) **Applicability.** This section specifies requirements governing the establishment and monitoring of sediment recovery zones. Sediment recovery zones are required at sites and sediment cleanup units where:
 - (a) The department has determined under WAC 173-204-570 that the selected cleanup actions cannot achieve sediment cleanup standards within ten years after completion of construction of the active components of the cleanup action; and
 - (b) Performance monitoring or a periodic review indicates a cleanup action has not achieved, or is projected to not achieve, sediment cleanup standards within ten years after completion of construction of the active components of the cleanup action.
- (2) **General requirements.** A sediment recovery zone shall comply with the following general requirements:
 - (a) When the department determines during the remedy selection process under WAC 173-204-570 that a sediment recovery zone is necessary, the sediment recovery zone shall be described in the cleanup action plan or other decision document issued under WAC 173-204-575;
 - (b) When the department determines that a sediment recovery zone is necessary as a result of performance monitoring or a periodic review, the sediment recovery zone shall be described in a new or amended decision document issued under WAC 173-204-575;
 - (c) Once established, the duration or boundary of a sediment recovery zone may only be adjusted during the periodic review process under WAC 173-204-570(3) or during the renewal of the sediment recovery zone. Any change in the duration or boundary of a sediment recovery zone is subject to public involvement under subsection (7) of this section;
 - (d) Specific authorization for the sediment recovery zone, any extension, or change to the duration or boundary of that zone, must be provided in an enforceable document (permit, order, consent decree, etc.);
 - (e) Establishment or expansion of a sediment recovery zone shall not be used as a substitute for active cleanup actions, when such actions are determined to be practicable under WAC 173-204-570;
 - (f) The areal extent of the sediment recovery zone shall be as small as practicable, as determined under WAC 173-204-570;
 - (g) The chemical concentrations within the sediment recovery zone shall be as close to the sediment cleanup standard as practicable, as determined under WAC 173-204-570;
 - (h) Appropriate source control measures shall be implemented to minimize contaminant loading on the sediment recovery zone from ongoing discharges; and
 - (i) Any authorization for a sediment recovery zone shall identify the legal location and landowners of property proposed as a sediment recovery zone.

Sediment Management Standards

WAC 173-204-590

- (3) **Criteria.** When considering whether to authorize, extend or change a sediment recovery zone, the department shall consider the criteria in subsection (2) of this section and the following factors:
- (a) Limitation of any modeling used to project the areal extent and time period needed for the sediment recovery zone;
 - (b) Potential risks posed by the sediment recovery zone to human health and the environment;
 - (c) The technical practicability of eliminating or reducing the size and degree of chemical contamination or level of biological and human health effects within the proposed sediment recovery zone as determined under WAC 173-204-570;
 - (d) Current and potential future use of the sediment recovery zone, surrounding areas, and associate resources that are, or may be, affected by releases from the zone including any aquatic state land use classification under chapter 332-30 WAC; and
 - (e) The need for institutional controls or other site use restrictions to reduce risks to human health while the sediment recovery zone is in place.
- (4) **Duration.** The department may authorize a sediment recovery zone for an initial duration of up to ten years and, upon application by a potentially liable person, authorize extensions in increments not to exceed ten years. When a potentially liable person has made timely and sufficient application, as specified in the authorizing document, for the renewal of a sediment recovery zone, the expiring authorization remains in effect and enforceable until the department either denies the application or reauthorizes the sediment recovery zone.
- The areal extent and time period during which a sediment recovery zone is projected to be necessary will be based on the source loading rate and the recovery rate. The source loading rate and recovery rate shall be determined by application of the department's models "CORMIX," "PLUMES," and/or "WASP," or an alternate method approved by the department under WAC 173-204-130(4), as limited by the requirements of this section and the department's best professional judgment.
- (5) **Operational terms and conditions.** Operational terms and conditions for the authorized sediment recovery zone shall be maintained at all times. These terms and conditions may include:
- (a) Chemical, bioassay, benthic infauna, or tissue monitoring of discharges, receiving water column, organisms, and sediment;
 - (b) Confirmation of sediment source(s) loading rates, chemical quality and biological toxicity;
 - (c) Monitoring contaminant bioaccumulation; and
 - (d) Ongoing evaluation of the water quality, sediment quality, biological conditions, and human health impacts within and adjacent to the proposed or authorized sediment recovery zone.
- (6) **Trespass not authorized.** A sediment recovery zone authorization issued by the department under the authority of chapter 70.105D RCW does not constitute authorization to trespass on lands not owned by the applicant. These requirements do not address, and in

Sediment Management Standards

WAC 173-204-590

no way alter, the legal rights, responsibilities, or liabilities of the permittee or landowner of the sediment recovery zone for any applicable requirements of proprietary, real estate, tort, and/or other laws not directly expressed as a requirement of this part.

- (7) **Public involvement.** Prior to authorization, the department shall make a reasonable effort to identify and notify all landowners affected by the proposed sediment recovery zone. The department shall issue a sediment recovery zone notification letter to any person it believes to be a potentially affected landowner, the Washington state department of natural resources, the U.S. Army Corps of Engineers, affected port districts, affected tribes, local governments with land use planning authority for the area, and other parties determined appropriate by the department. The notification letter shall be sent by certified mail, return receipt requested, or by personal service. The notification letter shall provide:
- (a) The name of the person the department believes to be the affected landowner;
 - (b) The names of other affected landowners to whom the department has sent a proposed sediment recovery zone notification letter;
 - (c) The name of the sediment recovery zone applicant;
 - (d) A general description of the proposed sediment recovery zone, including the chemical(s) of concern by name and concentration, and the area of affected sediment;
 - (e) The determination of the department concerning whether the proposed sediment recovery zone application meets the requirements of this section;
 - (f) The intention of the department whether to authorize the proposed sediment recovery zone; and
 - (g) Invite comments on the proposed sediment recovery zone. Any landowner comments shall be submitted in writing to the department within thirty days from the date of receipt of the notification letter, unless the department provides an extension.
- (8) **Enforcement.** The department shall review all data or studies conducted under a sediment recovery zone authorization to ensure compliance with the terms and conditions of the authorization and the requirements of this section. Whenever, in the opinion of the department, the terms and conditions of a sediment recovery zone or the requirements of this section are violated or there is a potential to violate the sediment recovery zone authorization or the requirements of this section, or new information or a reexamination of existing information indicates the sediment recovery zone is no longer appropriate, the department may at its discretion:
- (a) Require additional chemical or biological monitoring as necessary;
 - (b) Revise the sediment recovery zone authorization as necessary to meet the requirements of this section;
 - (c) Require active contaminated sediment maintenance actions, including additional cleanup in accordance with the standards of WAC 173-204-500 through 173-204-575; and/or
 - (d) Withdraw the department's authorization of the sediment recovery zone.

[Statutory Authority: Chapter 70.105D RCW. 13-06-014 (Order 08-07), § 173-204-590, filed

Adoption Date: February 22, 2013

Page 125

Sediment Management Standards

WAC 173-204-590

2/25/13, effective 9/1/13. Statutory Authority: RCW 90.48.220. 96-02-058, § 173-204-590, filed 12/29/95, effective 1/29/96. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-590, filed 3/27/91, effective 4/27/91.]

Adoption Date: February 22, 2013

Page 126

Sediment Management Standards

PART VI

**SAMPLING AND TESTING
PLANS/RECORDKEEPING**

WAC 173-204-600 through 173-204-620

Sediment Management Standards

WAC 173-204-600

PART VI
SAMPLING AND TESTING PLANS/RECORDKEEPING

WAC 173-204-600 Sampling and testing plan standards.

- (1) **Applicability.** These standards apply to:
 - (a) Any person who samples sediments to determine compliance with this chapter;
 - (b) Any person who makes application to the department for authorization of a sediment impact zone under the standards of WAC 173-204-400 through 173-204-420; and
 - (c) Any person who samples sediments consistent with cleanup action plans approved and cleanup actions conducted under this chapter.
- (2) All applicable persons shall at a minimum, develop, keep, and abide by a sediment sampling and testing plan. The sampling and testing plan shall be available for inspection at the request of the department. Sediment sampling and testing plans shall identify sampling dates, sample types, sample depths, sample composites, sample locations, sample positioning methods, sampling personnel, sampling equipment and methods, a description of methods of chemical analysis and biological testing, and quality assurance/quality control procedures.
- (3) Sediment sampling locations and procedures and testing protocols and interpretations shall be those included in the Puget Sound protocols as amended and/or other methods approved by the department.
- (4) The department reserves the right to revise these sampling and testing protocols when:
 - (a) The Puget Sound protocols are modified or updated per the approval of the department; or
 - (b) The department determines the Puget Sound protocols are not applicable to, or appropriate for analysis of sediment chemical contamination in any given case.

[Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-600, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards

WAC 173-204-600

This page intentionally blank.

Adoption Date: February 22, 2013

Page 130

Sediment Management Standards

WAC 173-204-610

WAC 173-204-610 Records management.

- (1) **Applicability.** These standards apply to:
 - (a) Any person who samples sediments to determine compliance with this chapter;
 - (b) Any person who makes application to the department for authorization of a sediment impact zone under the standards of WAC 173-204-400 through 173-204-420.
- (2) All applicable persons shall keep sediment sampling and testing records as follows:
 - (a) Sediment sampling and testing plans which identify sampling dates, sample types, sample composites, sample locations, sample depths, sample positioning method, sampling personnel, sampling equipment and methods, quality assurance/quality control plans, and sampling procedures.
 - (b) Sediment removal records which identify removal dates, dredging contractor/equipment, volume of sediment removed, analytical data generated during the sediment removal process, and sediment disposal location(s).
 - (c) Records and results of sediment analyses conducted in accordance with this chapter, or as required under activities authorized under chapter 173-225 WAC, establishment of implementation procedures of application for certification.
 - (d) Records and results of inspections conducted as required under chapter 173-225 WAC, establishment of implementation procedures of application for certification.
 - (e) Sediment treatment records.
 - (f) Sediment onsite capping records.
 - (g) Sediment disposal records which identify sediment disposal location(s), onsite operating records, sediment volumes, disposal site property owner(s), and the chemical/biological nature of effluent discharges from the disposal location including the name, location, and quality of the receiving water.
- (3) All sediment records as required under subsection (2) of this section must be furnished upon request, and made available at all reasonable times for inspection, by any officer, employee, or representative of the department who is designated by the director.
- (4) All sediment records as required in this section shall be maintained for a period not less than ten years after the issuance, modification, or renewal of the applicable permit, or administrative order, or certification, or cleanup site delisting under WAC 173-204-540(6), whichever is greater.

[Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-610, filed 3/27/91, effective 4/27/91.]

Sediment Management Standards

WAC 173-204-610

This page intentionally blank.

Adoption Date: February 22, 2013

Page 132

Sediment Management Standards

WAC 173-204-620

WAC 173-204-620 Severability.

If any provision of this chapter or its application to any person or circumstance is held invalid, the remainder of this chapter or the application of the provision to other persons or circumstances shall not be affected.

[Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), § 173-204-620, filed 3/27/91, effective 4/27/91.]

Adoption Date: February 22, 2013

Page 133

Sediment Management Standards

WAC 173-204-620

This page intentionally blank.

Adoption Date: February 22, 2013

Page 134

Sediment Management Standards

Disposition Of Section Formerly Codified in this Chapter

- 173-204-520 Cleanup screening levels criteria. [Statutory Authority: RCW 90.48.220. 96-02-058, ' 173-204-520, filed 12/29/95, effective 1/29/96. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), ' 173-204-520, filed 3/27/91, effective 4/27/91.] Decodified and amended by 13-06-014 (Order 08-07), filed 2/25/13, effective 9/1/13. Statutory Authority: Chapter 70.105D RCW. Recodified as WAC 173-204-562.
- 173-204-530 Hazard assessment and site identification. [Statutory Authority: RCW 90.48.220. 96-02-058, ' 173-204-530, filed 12/29/95, effective 1/29/96. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), ' 173-204-530, filed 3/27/91, effective 4/27/91.] Decodified and amended by 13-06-014 (Order 08-07), filed 2/25/13, effective 9/1/13. Statutory Authority: Chapter 70.105D RCW. Recodified as WAC 173-204-520.
- 173-204-540 Ranking and list of sites. [Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), ' 173-204-540, filed 3/27/91, effective 4/27/91.] Decodified and amended by 13-06-014 (Order 08-07), filed 2/25/13, effective 9/1/13. Statutory Authority: Chapter 70.105D RCW. Recodified as WAC 173-204-530.
- 173-204-550 Types of cleanup and authority. [Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), ' 173-204-550, filed 3/27/91, effective 4/27/91.] Decodified and amended by 13-06-014 (Order 08-07), filed 2/25/13, effective 9/1/13. Statutory Authority: Chapter 70.105D RCW. Recodified as WAC 173-204-540.
- 173-204-560 Cleanup study. [Statutory Authority: RCW 90.48.220. 96-02-058, ' 173-204-560, filed 12/29/95, effective 1/29/96. Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), ' 173-204-560, filed 3/27/91, effective 4/27/91.] Decodified and amended by 13-06-014 (Order 08-07), filed 2/25/13, effective 9/1/13. Statutory Authority: Chapter 70.105D RCW. Recodified as WAC 173-204-550.
- 173-204-570 Sediment cleanup standards. [Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), ' 173-204-570, filed 3/27/91, effective 4/27/91.] Decodified and amended by 13-06-014 (Order 08-07), filed 2/25/13, effective 9/1/13. Statutory Authority: Chapter 70.105D RCW. Recodified as WAC 173-204-560.
- 173-204-580 Cleanup action decision. [Statutory Authority: Chapters 43.21C, 70.105D, 90.48, 90.52, 90.54 and 90.70 RCW. 91-08-019 (Order 90-41), ' 173-204-580, filed 3/27/91, effective 4/27/91.] Decodified and amended by 13-06-014 (Order 08-07), filed 2/25/13, effective 9/1/13. Statutory Authority: Chapter 70.105D RCW. Recodified as WAC 173-204-570.